Vol. 27. No. 10. pp. 501 - 556
Abstracts 2875 - 3161

October, 1957

THE VETERINARY BULLETIN

COMPILED FROM WORLD LITERATURE

Prepared by the
COMMONWEALTH BUREAU OF ANIMAL HEALTH
WEYBRIDGE, SURREY
ENGLAND

Published by the
COMMONWEALTH AGRICULTURAL BUREAUX
FARNHAM ROYAL, ENGLAND

COMMONWEALTH MYCOLOGICAL INSTITUTE
3 OCT 1957

Commonwealth Agricultural Bureaux

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THE

VETERINARY BULLETIN

Vol. 27] October, 1957 [No. 10

DISEASES CAUSED BY BACTERIA AND FUNGI

JONES, A. C., KING, G. J. G., FENNELL, H. & STONE, D. (1957). **The growth of *Staph. aureus* in milk with special reference to food poisoning.**—*Mon. Bull. Minist. Hlth Lab. Serv.* **16,** 109-122. [Authors' summary modified.] **2875**

In milk from a cow naturally infected with *Staph. aureus,* and in milk drawn aseptically from a normal cow the organism grew well at 30° and 37° C., but below 25° C. growth was so slow as to render negligible the chances of the milk becoming toxic within 24 hours. The presence of lactic and faecal streptococci in numbers equal or superior to those of staphylococci appeared to restrain staphylococcal growth, particularly at the lower temperatures. It is concluded that staphylococcal food poisoning is unlikely to occur unless milk from a naturally infected udder is withdrawn under good hygienic conditions, is kept at a fairly high temp. for a sufficient length of time, is not mixed with that of other cows to a degree sufficient to dilute the toxin below the active level, and is drunk raw.

BERGER, A. J., SCHRAMM, G., HAMAGAMI, L. T. & COOK, E. S. (1957). **Antistaphylococcic factors in brain extract.**—*Nature, Lond.* **179,** 588-589. **2876**

A crude extract of ox brain having been shown to be effective in the prevention and treatment of *Staphylococcus aureus* infections in mice, the authors investigated the active factors in the extract. Amino-acids, peptides, acidic and basic substances were demonstrated; acid fractions, which are as yet unidentified, inhibited growth of *Staph. aureus* and were considerably more potent than the crude extract against infections *in vivo*.—E.V.L

PARK, J. T. & STROMINGER, J. L. (1957). **Mode of action of penicillin. Biochemical basis for the mechanism of action of penicillin and for its selective toxicity.**—*Science* **125,** 99-101. **2877**

Comparison of analysis of the cell wall of *Staphylococcus aureus* and of a uridine nucleotide that accumulates in a penicillin-treated preparation of this organism, suggests that the selective toxicity of penicillin is due to its interference in a metabolic sequence that is not found in animal cells, namely the biosynthesis of the cell wall.—D. S. PAPWORTH.

KAWAMATA, J., SHIGETO, T. & KUNITA, N. (1956). **Sensitization of pencillin resistant *Micrococcus pyogenes* var. *aureus* by an extract containing nucleic acid from a penicillin sensitive soil *Bacillus*.**—*Med. J. Osaka Univ.* **7,** 191-201. [Abst. from abst. in *Bull. Hyg., Lond.* **32,** 478. (1957).] **2878**

Extraction of the nucleic acid fraction of a strain of *Bacillus circulans,* itself highly sensitive to penicillin, yielded a substance which sensitized a staphylococcus artificially adapted to the antibiotic.—M.G.G.

STRUMIŁŁO, Z. (1957). Paciorkowce beta-hemolityczne nasienia ogierów w świetle okresowych badań bakteriologicznych. **[Presence of β-haemolytic streptococci in horse semen.]** —*Méd. vét., Varsovie* **8,** 257-261. [In Polish. French and Russian summaries.] **2879**

In examinations of stallion semen in 2 National Studs 51 strains of β-haemolytic streptococci were isolated from 397 samples in 1953; 27 strains from 394 samples in 1954; and 63 strains from 396 samples in 1955. Over 90% of these strains belonged to Lancefield's Group C and of these 50% were strains of *Str. zooepidemicus;* the remaining 50% were atypical Group C streptococci. *Str. equi* was recovered only on one occasion. K. is of the opinion that only very few stallions are carriers of β-haemolytic streptococci, and that their presence in semen is usually accidental and of temporary character;; their habitat appears to be rather the urinogenital tract than the semen itself.—M. GITTER.

VISCONTI, G. (1956). Su di un focolaio di mastite streptococcica trattato con antibiotici + antistaminici di sintesi. **[Treatment of streptococcal mastitis with penicillin and synthetic antihistamine.]**—*Veterinaria, Milano* **5,** 242-244. [English, French and German summaries.] **2880**

An outbreak of streptococcal mastitis in 53 cows (194 quarters) was treated with 2 infusions of 0·1 megaunit of penicillin plus 25 mg. of an antihistamine on consecutive days. 14 of these cows required a second, and 6 a third course for complete control, the remainder having been cured by the first course.—G. P. MARSHALL.

SCHALM, O. W. & NOORLANDER, D. O. (1957). **Experiments and observations leading to development of the California mastitis test.** —*J. Amer. vet. med. Ass.* **130,** 199-240. **2881**

An account of a rapid and accurate field test for mastitis. 2–3 ml. samples of milk from each teat are drawn into plastic cups attached to a white plastic paddle with a handle. An estimated equal quantity of the anionic surface active agent alkyl arylsulphonate in a 3–5% concentration mixed with Bromcresol purple is added and the paddle gently agitated. With foremilk having a cell count in excess of 100,000 cells per ml, and "strippings" having a cell count in excess of 200,000 cells per ml., a precipitate or gel formation develops according to the cell count, whilst the extent of depression of milk secretion is indicated by the colour reaction with the Bromcresol purple due to alkalinity.

—A. ACKROYD.

NOORLANDER, D. O. & SCHALM, O. W. (1957). **Interpretation of production graphs in mastitis control.**—*J. Amer. vet. med. Ass.* **130,** 205-207. **2882**

Graphs are presented to show that graphical recording of a cow's milk production, based upon the weight of milk produced in a 24-hour period and obtained once each month, can provide a basis for evaluating the effect of mastitis on the quantity of milk secreted and for measuring the improvement in individual cows and the herd as a whole, following the use of measures for the control and treatment of mastitis.—A. ACKROYD.

MARTINI, I. (1957). Mastiti acute, edemi mammari e ormoni corticosurrenali. **[Adrenocortical hormones in acute mastitis and mammary oedema.]**—*Vet. ital.* **8,** 287-291. **2883**

A review article on the treatment of mastitis and oedema of the mammary gland.—T.E.G.R.

BROWN, R. W. & SCHERER, R. K. (1957). **A report on two cases of acute mastitis caused by *Bacillus cereus*.**—*Cornell. Vet.* **47,** 226-240. **2884**

In each case there were systemic disturbances which subsided within a few days after treatment with sulphonamides and antibiotics; the mastitis, however, persisted. In one case the exudate was free from bacteria for about 4 months from the onset of mastitis but a subsequent examination in the 6th month revealed *Corynebacterium pyogenes,* which was again isolated from the exudate 20 days later. Cultures were made [it is not stated at what stage of the disease] from the exudate from the affected quarter in each case, and colonies of organisms were obtained which, from their cultural, morphological, staining and biochemical characteristics, were considered similar to *B. cereus.* These organisms were not pathogenic for g. pigs; they caused a small focus of necrosis when injected i/d into a rabbit; and caused a mild transient mastitis in cows when injected directly into the quarters.—T.E.G.R.

PROVOST, A. & TROUETTE, M. (1957). Réflexions sur quelques cas de charbon bactéridien "cryptique" chez des bovins. **[Latent anthrax in cattle.]**—*Rev. Élev.* **10,** 25-26. [English and Spanish summaries.] **2885**

Enlarged abdominal lymph nodes were observed in a zebu ox which, before slaughter, had a temp. of 40° C. Long chains of Gram-positive, capsulated bacilli similar to *B. anthracis* were seen, but the Ascoli test was negative. S/c injection of cultures of the bacillus killed g. pigs within 24 hours and sheep in 36 hours. The same organism was isolated from other zebu cattle, in which no clinical symptoms had been observed, and in which P.M. examination revealed only slight adenitis of the prescapular, precrural or mesenteric lymph nodes. It is recommended that all cases of suspected adenitis in slaughtered animals should be submitted for microscopic inspection.—M.G.G.

BUICHKIN, P. V. (1956). **[Infection and immunity in anthrax in the light of Pavlov's teaching. I, II & III.]**—*Trud. mosk. vet. Akad.* **12,** pp. 82-87; 88-91 & 92-97. [In Russian. Translation of author's summaries, slightly modified.] **2886**

Inhibition of the central nervous system by urethane narcosis lasting for 18–20 hours and commencing immediately after inoculation, accelerated the course of anthrax in white mice inoculated with Tsenkov's first vaccine: all the

mice died, compared with only 27–83% normal vaccinated mice.

In mice recovered from the inoculation of Tsenkov's first vaccine or "STI" vaccine, anthrax bacilli persisted in the body for at least 60 days. Urethane narcotic sleep, applied 10, 20, 30, 45 and 60 days after inoculation of either vaccine, caused the death of a significant number of the narcotized mice from anthrax. It was suggested that a latent form of anthrax followed vaccination, and this was converted into an active, lethal infection by urethane narcosis.

The neuro-receptor apparatus of the body played a major role in the onset, course and outcome of anthrax in rabbits. One and the same dose of Tsenkov's second vaccine caused different reactions when inoculated into different zones of the neuro-receptor apparatus. Thus vaccine inoculated s/c, i/d or i/m into the thigh did not cause an observable reaction in rabbits; intratesticular vaccination caused a severe local reaction in the form of swelling of the testicle, but the rabbit did not die. I/p injection killed 2 of 5 rabbits and i/v inj. 1 of 5. Injection into the masseter muscle caused severe local reaction and the death of 3 of 5 rabbits. All rabbits inoculated intracerebrally died from anthrax 1–2 days after inoculation.

SHULYAK, F. S. (1956). **[New method of distinguishing anthrax bacilli from anthracoid organisms.]**—*Trud. mosk. vet. Akad.* **12,** pp. 116-122. [In Russian.] **2887**

Anthrax bacilli did not grow on 5% meat-peptone–bile agar in the presence of a 1 : 1,000 conc. of 1% brilliant green solution, whereas anthracoid organisms (*Bacillus pseudoanthracoides, B. anthracoides, B. subtilis, B. mesentericus, B. megatherium* and *B. mycoides*) did grow.—R.M.

BÖHNE, F. (1957). Tuberkulose bei Schlachttieren. **[Incidence of TB. in slaughter animals in the German Federal Republic from 1952 to 1955.]**—*Rindertuberkulose* **6,** 28-30. **2888**

In the period 1952–55, the proportion of cattle in attested herds in Western Germany rose from 9% to 40%. During this time the incidence of TB. in slaughter cattle, excluding calves up to 3 months old, rose from 27·1% to 29·7%. Cows and heifers were responsible for this increase, as the incidence in bulls and oxen declined slightly. That in calves remained stationary. The incidence in slaughtered pigs declined from 2·5% to 2%, and in sheep from 0·23% to 0·17%. In goats it rose from 2% to 2·6%, and in horses from 0·3% to 0·47%.

—M.G.G.

NASSAL, J. (1957). Eutertuberkulose und Milchhygiene. **[Mammary TB. and milk hygiene.]**—*Berl. Münch. tierärztl. Wschr.* **70,** 173-174. [English summary.] **2889**

Of 103,324 samples of milk from tuberculin reactors, 1161 contained tubercle bacilli. In 50% of the affected cows there were no noticeable changes in the clinical appearance of the udder parenchyma nor in the milk.—M.G.G.

MEYN, A. & SCHLIESSER, T. (1957). Über das Vorkommen von Tuberkelbakterien im Fleisch tuberkulöser Rinder. **[Incidence of tubercle bacilli in the meat of tuberculous cattle.]**—*Berl. Münch. tierärztl. Wschr.* **70,** 210-212. [English summary.] **2890**

Of 648 samples of meat from cattle with localized TB. (chronic or primary infections), 13% contained tubercle bacilli. Counts of the colonies on inoculated culture media and observation of inoculated g. pigs indicated that the concentration of bacilli may be high, particularly in cattle with chronic, generalized TB.

—M.G.G.

LAMBRECHTS, M. C. (1956). **Aspects of tuberculin testing in cattle.**—*J. S. Afr. vet. med. Ass.* **27,** 225-243. **2891**

The various factors which must be considered for the correct interpretation of the intradermal tuberculin test in cattle are discussed. These include the tuberculin used, the phenomenon of tuberculin sensitivity, non-specific sensitization, the antigenic relationship of mycobacteria and the sensitivity of the individual. Comparisons of human and bovine tuberculins indicate that better results may be obtained by using a bovine P.P.D. instead of a human P.P.D. as the standard tuberculin. The standards of interpretation in various countries are compared. All seem too severe under South African conditions. So-called "skin-tuberculosis," which appears to be of particular importance in S. Africa, is considered in detail and examples are quoted of possible errors in interpretation in initial tests of herds.

—A. ACKROYD.

LEGKII, A. S. & PONOMAREV, F. G. (1956). **[Vaccination of calves against TB. with B.C.G.]**—*Trud. novocherkassk. zoo.-vet. Inst.* **9,** pp. 109-118. [In Russian.] **2892**

Forty-five castrated tuberculin-negative calves aged 6 months were each inoculated s/c with two doses of 50–100 mg. dried B.C.G. vaccine, 30 days apart. Fifteen calves were kept as unvaccinated controls. Immunity was

tested by continuous contact with infected cows, or by the inoculation of virulent tubercle bacilli, and the results were assessed by P.M. examination. It was found that two 50 mg. doses provided a solid immunity for 11 months. Intradermal inoculation of calves aged 1–10 days with two 10 mg. doses, a month apart, protected them for 12 months. Immunization was recommended for calves born on isolation farms for the segregation of tuberculous cows.—R.M.

RUMEAU, J. G. (1957). **Animal tuberculosis in Africa south of the Sahara.**—*Bull. epiz. Dis. Afr.* **5,** 21-32. [In French pp. 69-87.] **2893**

The incidence of TB. in cattle and pigs as recorded in the official records in each territory in Africa south of the Sahara is reviewed. The disease is only rarely encountered in the Republic of the Sudan, Kenya, parts of French West Africa, Basutoland and Swaziland, but in the highlands of Tanganyika, the Cameroons and Western Uganda, Madagascar and the suburban and urban dairies in the Rhodesias and the Union of South Africa, the incidence is high and the disease is of considerable economic importance. Ubangi-Shari is the most heavily infected area of French Equatorial Africa and Haute Volta of French West Africa. In the Belgian Congo the disease, which was widespread in the dairy herds of Kalanga, has in the last 20 years been almost eradicated by standard measures rigorously applied. In Mozambique and Angola, TB. appears to be well established in both cattle and pigs.—A. ACKROYD.

THORPE, E. (1957). **An assessment of the intravenous tuberculin test as an aid in the diagnosis of tuberculosis in dogs.**—*Vet. Rec.* **69,** 555-557. **2894**

In studies in 44 non-tuberculous and 6 tuberculous dogs the intravenous tuberculin test was found to be of no value for diagnosis.

—F.E.W.

DE KOCK, G. & LE ROUX, J. (1956). **Studies on tuberculosis in dogs, and on a case of human tuberculosis contracted from a dog.**—*Onderstepoort J. vet. Res.* **27,** 227-238. **2895**

A report of a case, believed to be the first recorded, in which a circumscribed tuberculous skin nodule developed on a finger of a man after P.M. examination of an infected dog. The latter appeared to have neoplasm-like lesions in the caeco-colic lymph nodes. Histologically, in this and another case in a dog, clusters of macrophages and epithelioid cells dominated the picture in the lesions whilst there was no evidence of giant cells or calcification. In both dogs the infection was with the human type of organism and was of the nature of an incomplete primary complex in the alimentary tract with dissemination of the disease to the liver and lungs.

—A. ACKROYD.

SCHLIESSER, T. & BACHMAIER, K. (1957). Beitrag zur epidemiologischen Bedeutung der Katzentuberkulose. [**Epidemiological importance of TB. in cats.**]—*Rindertuberkulose* **6,** 23-27. **2896**

A new infection in an attested herd of 6 cattle was traced to a cat which often visited the cow-house. The animal was emaciated. P.M. examination revealed a large mass in the abdomen, consisting of adherent intestinal loops and a greatly swollen mesenteric lymph node, from which bovine type tubercle bacilli were isolated. The literature on TB. in cats is reviewed. Diagnosis is difficult, and histological or bacteriological examination is usually necessary.

—M.G.G.

RATCLIFFE, H. L. & MERRICK, J. V. (1957). **Tuberculosis induced by droplet nuclei infection. Its developmental pattern in hamsters in relation to levels of dietary protein.**—*Amer. J. Path.* **33,** 107-129. [Authors' summary and conclusions modified.] **2897**

Groups of young adult hamsters, after 6 weeks on three experimental diets, inhaled small numbers of tubercle bacilli of human origin and were kept on these diets (supplying approx. 30, 17, and 6% protein) until killed for study at intervals between 75 and 200 days after infection.

Levels of dietary protein did not influence susceptibility to droplet infection by tubercle bacilli of high or low virulence, nor modify the progress of disease induced by organisms of low virulence within 200 days; neither did they modify the progress of TB. induced by organisms of high virulence until about 130 days after infection. Beyond this time, however, progress of TB. was most rapid in animals on 6% protein. In hamsters on 30% protein, TB. was arrested, or regressed for a time. Its reactivation in animals on this diet was associated with progressive glomerulosclerosis. It was concluded that, in hamsters, dietary protein can be a critical factor in the development of effective levels of resistance to TB. This requires relatively prolonged contact with the virulent organism, and apparently reflects the combined actions of the monocytes and other factors which are presumably antibodies. Rapid failure of resistance in association with hepatic and renal disease supports this suggestion. The highly

uniform reaction of these animals for upwards of 130 days, irrespective of their diet, is further evidence against the theory of native or hereditary resistance to TB.

WASZ-HÖCKERT, O. & BACKMAN, A. (1956). **Studies on the host-parasite relationship. I. Influence of diptheria-pertussis-tetanus vaccine on guinea-pig tuberculosis. II. Influence of pertussis vaccine on guinea-pig tuberculosis.** —*Ann. Med. exp. Fenn.* **34,** 269-276 & 277-286. [In English.] [Abst. from abst. in *Bull. Hyg., Lond.* **32,** 374. (1957).] **2898**

The number and size of tuberculous lesions in g. pigs with experimental TB. was greater in those which had received large doses of heterologous vaccine after infection, and greatest in those which had received a strong univalent vaccine 2 weeks after infection. It is considered that the vaccines, by stimulating maximum production of antibodies, weakened resistance to a heterologous infection.—M.G.G.

FONG, J., SCHNEIDER, P. & ELBERG, S. S. (1957). **Studies on tubercle bacillus–monocyte relationship. II. Induction of monocyte degeneration by bacteria and culture filtrate: specificity of serum and monocyte effects on resistance to degeneration.**—*J. exp. Med.* **105,** 25-37. [For part I, see *V.B.* **27,** 17.] **2899**

Virulent strains caused degeneration of normal monocytes cultivated in the presence of normal serum; attenuated strains were less active and avirulent organisms had no effect. Comparison of the effects of virulent H37Rv with Old Tuberculin (O.T.), purified protein derivative (P.P.D.) and a culture filtrate of H37Rv revealed a similarity of action between H37Rv and its filtrate. O.T. and P.P.D. acted upon immune cells, while H37Rv was active against normal cells. Immune serum (anti-B.C.G.) protected immune cells against H37Rv but not against O.T. or P.P.D. The protection of immune cells against H37Rv by heterologous and homologous antisera indicated a non-specific action on the part of the serum factors. Under similar conditions of cultivation in immune (anti-B.C.G.) serum, monocytes of animals vaccinated with B.C.G. were resistant to H37Rv while those of animals vaccinated with *Salmonella rutgers* were not. This is taken as an indication of specific cellular resistance.—T.E.G.R.

SEIBERT, F. B. & SOTO-FIGUERAO, E. (1957). **Study of tuberculin protein and polysaccharide antigens by gel-diffusion technique.**—*Amer. Rev. Tuberc.* **75,** 601-607. [French and Spanish summaries. English summary modified.] **2900**

Double diffusion into gels in one dimension proved of value for study of tuberculin protein polysaccharide antigens. The polysaccharide gave two distinct bands with strong B.C.G. antiserum and there was also a band at or close to the interface between serum and agar. Both bands were distinguishable by the fact that their optimal precipitation occurred at a much higher dilution of the polysaccharide (0·062 to 0·0075 mg. per ml.) than was true with the protein antigens. Therefore, very minute amounts of polysaccharide antigens as well as antibodies to polysaccharide can be detected by this sensitive method. The optimal precipitation with the tuberculin protein antigens occurred at a conc. of 3·0 or 0·5 mg. per ml. Type A protein showed several bands which appeared no higher than the middle of the agar layer. Types B and C, bacillary protein, and PPD-S also showed several bands, but with these antigens bands were also frequently found close to the interface between agar and antigen.

RAMAKRISHNAN, T., INDIRA, M. & SIASI, M. (1957). **A new growth-promoting factor for *Mycobacterium tuberculosis*.**—*Nature, Lond.* **179,** 1356-1357. **2901**

The addition of coconut water to Youmans' medium reduced the number of days for maximum growth of *M. tuberculosis* from 20 to 12. Systematic fractionation was undertaken to isolate the growth-promoting factor, which was found to be a polysaccharide. Further work on its purification and identification is in progress. —E.V.L.

OEDING, P. & HAALAND, H. (1957). **Antagonism between p-aminosalicylic acid and procaine penicillin on the growth of tubercle bacilli.**—*Acta path. microbiol. scand.* **40,** 136-142. [In English.] **2902**

A marked increase in the resistance of *M. tuberculosis* H37Rv to *p*-aminosalicylic acid (PAS) in slide cultures was found to be due to the use in the medium of procaine penicillin in place of the crystalline penicillin formerly used. Procaine penicillin antagonized the bacteriostatic action of PAS through its *p*-aminobenzoic acid (PABA) content alone [see also Youmans *et al.* (1947).—*J. Bact.* **54,** 409]. Partial antagonism was noted with 5 units of procaine penicillin (corresponding to 1 μg. of PABA) against 1μg. of PAS per ml. of medium. There was no difference in this respect between non-virulent and virulent strains, nor between human, bovine and

avian type strains. The penicillin used in culture medium in determination of sensitivity to PAS should not be procaine penicillin.

—D. S. Papworth.

Ovanesova, N. B. (1956). [**Role of the nervous system in the allergic reaction in fowls with TB.**]—*Trud. mosk. vet. Akad.* **12,** pp. 138-148. [In Russian.] **2903**

Tuberculous fowls failed to react to tuberculin after 3 or 4 injections at 7–10 day intervals. Anergy also resulted from repeated s/c injections of tuberculin into parts other than the wattles, *e.g.* the thigh, and after the injection of a single large dose of tuberculin. In 21 out of 22 tuberculous fowls, the reaction to tuberculin was negative when it was injected 3–5 hours after the induction of urethane narcosis lasting for about 7 hours. The reaction was much reduced when 0·3–0·7 ml. dicaine (a local anaesthetic) was injected into the skin of the wattle, 15–30 min. before the injection of tuberculin into the same wattle.—R.M.

Forscher, E. (1956). Ferment-Antibiotika-Kombination bei der Pyogenes-Mastitis des Rindes. [**Treatment of *Corynebact. pyogenes* mastitis with a combination of trypsin, penicillin and streptomcyin.**]—*Dtsch. tierärztl. Wschr.* **63,** 377-381. **2904**

An intramammary infusion containing 0·5 megaunit of penicillin, 0·5 g. of streptomycin and 1 g. of crystalline trypsin in 50 ml. of physiological saline was used in 24 cows with mastitis due to *C. pyogenes*. The daily application of this amount for 5 to 7 days proved adequate to produce a cure in dry cows, function being maintained in the case of fresh infections, while atrophy occurred in older infections. The chances of success with this preparation were very slender in the case of lactating cows.

—G. P. Marshall.

Kwiatkowski, T. (1957). Pyelonephritis bacteritica bovum. [**Corynebacterial pyelonephritis in cattle.**]—*Méd. vét., Varsovie* **8,** 289-291. [In Polish.] **2905**

Two clinical cases are described. One cow was given streptomycin, sulphonamides, diuretics, urinary antiseptics, trace elements etc., and died on the 11th day of treatment. The second one was sent for slaughter. K. is of the opinion that treatment is of no avail unless the disease is diagnosed in its early stages before considerable damage has been done to the kidneys.

—M. Gitter.

Tajima, Y., Kuramasu, S. & Tajima, M. (1957). **Studies on erysipelosis. I. Infectivity and immune response of albino mice (ddN-stock) to *Erysipelothrix rhusiopathiae*.**—*Zbl. VetMed.* **4,** 1-17. [In English. French, German and Spanish summaries.] **2906**

In mice, 3 and 5 weeks old, inoculated with highly virulent *E. rhusiopathiae,* the organism could be recovered from most organs within 24 hours and multiplied most actively in the heart. Histologically, lesions were most evident in the reticuloendothelial system and in the heart. With an acriflavine-attenuated strain, distribution throughout the body was also rapid and the organism could be recovered even after 3 months, but multiplication was slow and serious lesions were absent. Mice challenged with the virulent strain 8 days after inoculation with the attenuated strain survived although multiplication of the challenge organism did occur, but when they were challenged 3 months after inoculation, no multiplication or lesions at the site of inoculation were evident.—A. Ackroyd.

Tereszczuk, S. (1957). Doświadczenia nad przedłużeniem terminu ważności oraz podniesieniem wartości uodparniającej szczepionki Stauba. [**Attempts at increasing the keeping quality and protective value of swine erysipelas vaccine described by Staub.**]—*Méd. vét., Varsovie* **13,** 193-198. [In Polish. English and Russian summaries.] **2907**

By adding 0·25% agar and 0·2% Na_2HPO_4, to the 3% horse serum broth used for the growth of Staub's vaccine, the keeping quality of the vaccine was lengthened by 10 days (*i.e.*, it could be kept for 25 days from the day the medium was inoculated). Vaccine so prepared protected pigs for 3½ months against i/d inoculation of a virulent strain of *E. rhusiopathiae*.—M. Gitter.

Osebold, J. W., Shultz, G. & Jameson, E. W., Jr. (1957). **An epizootiological study of listeriosis.**—*J. Amer. vet. med. Ass.* **130,** 471-475. **2908**

During investigations of an outbreak of *Erysipelothrix* (*Listeria*) *monocytogenes* Type 4b infection in sheep and cattle, reports of sick or dead skunks and raccoons were received. 107 wild mammals and birds were collected, including ground squirrels, mice, seagulls, buzzards, and 29 rabbits. All were negative, except for a skunk (*Mephitis mephitis*), found sick, from which listeria Type 4b was isolated.—M.G.G.

Olson, C., Grace, O. D., Segre, D. & Blore, I. C. (1957). **Enhancement of listeriosis in sheep with material from bovine mucosal disease.**—*Amer. J. vet. Res.* **18,** 303-309. **2909**

Lymph node material, saliva, blood, and

other tissues from cattle with mucosal disease had an enhancing effect on experimental listeriosis in 6 of 16 sheep, as judged by the death of the sheep and recovery of the organism from the central nervous system. The material was given both intravenously and intranasally, or intranasally alone, together with *Erysipelothrix* (*Listeria*) *monocytogenes*.

A "listeriosis-enhancing agent", considered to differ from that obtained from the cattle, was again demonstrated in sheep with listeriosis [see also *V.B.* **26,** 2786]. Blood was withdrawn from 4 lambs with temperatures higher than 106°F. and, after storage at −65°C., was pooled and injected intranasally with *E. monocytogenes* into 2 sheep. Both died 21 and 24 days later and listeria were isolated. Blood was again withdrawn from the 4 lambs, after their temperatures had become normal, and injected, with listeria, into 2 sheep. These remained healthy.—M.G.G.

BAIN, R. V. S. (1957). **A note on some pasteurella types found in Australian animals.**—*Aust. vet. J.* **33,** 119-121. [Author's summary modified.] **2910**

Four of the main serotypes of *Past. septica*, Types I, II, III and IV of Roberts [*V.B.* **19,** 1180], have been isolated in Australia. Other unidentified types occur also. *Past. haemolytica* was isolated from pneumonic cattle lung.

CARTER, G. R. (1957). **Studies on *Pasteurella multocida*. III. A serological survey of bovine and porcine strains from various parts of the world.**—*Amer. J. vet. Res.* **18,** 437-440. [Author's summary modified.] **2911**

Among 197 cultures of *Past. septica* from cattle and pigs in various parts of the world, serologically typed by the haemagglutination test, Types A and B from cattle predominated. The Type A strains were most frequently associated with pneumonia. Type B strains were usually recovered from cattle with haemorrhagic septicaemia, for the most part from tropical and subtropical countries. The Type A strains were more prevalent in temperate zones. The strains from pigs were predominantly Types A and D. Secondary pasteurella pneumonia was the most important disease condition associated with the isolations from pigs.

Recommendations are made with regard to the selection of serological types of *Past. septica* for the preparation of killed vaccines and of antisera for the prevention of "shipping fever" and haemorrhagic septicaemia of cattle, and secondary pasteurella pneumonia of pigs.

Fourteen bovine and porcine strains could not be typed. Of these, 7 were considered nontypable because of antigenic roughness as revealed by the acriflavine test.

GRIGORIU, N., TACU, D. & TICAN, V. (1956). Valoarea imunizantă a vaccinului antipasteurelic porcin preparat prin diferite metode. [**Immunizing value of vaccines against pasteurellosis in pigs.**]—*Anu. Inst. Seruri Vaccin. Pasteur, Bucuresti* **1,** pp. 223-234. [In Roumanian. French, German and Russian summaries. Abst. from French summary.] **2912**

A polyvalent vaccine against pasteurellosis in pigs was prepared with the use of aluminium hydroxide gel and 2½% formol. When given to rabbits, either s/c or i/m, in 2 doses each of 2 ml. with an interval of 8–10 days, it protected 70%–80% of the animals against a challenge infection of 100 m.l.d. After 3 months 62% of the animals resisted infection. Vaccine prepared only with formol protected 50%–66% and, 3 months later, 42% of rabbits against challenge infection. Vaccine prepared with alum and formol protected 30%–40% and, 3 months later, 28%. In a group of rabbits infected with pasteurella deaths ceased 4–7 days after the second injection of vaccine.—M.G.G.

SINHA, S. K., TACHIBANA, T. F. & FAGAN, R. (1957). **A quantitative evaluation of immune response in mice following intraperitoneal inoculation of killed strains and an avirulent strain of *Pasteurella multocida* (Type II).**—*Cornell Vet.* **47,** 281-291. [Abst. from authors' summary.] **2913**

Heat-killed strains ("890" and "656"), injected i/p, protected mice in which the immune response was highest at 3 weeks. An avirulent live strain ("890-M") had higher immunizing properties than the heat-killed strains and maximum protection was also observed at 3 weeks, after which it declined rapidly.

PIASECKA-SERAFIN, M. (1957). Gruźlica rzekoma ptaków. [**Avian *Pasteurella pseudotuberculosis* infection.**]—*Méd. vét., Varsovie* **13,** 208-211. [In Polish. English and Russian summaries.] **2914**

Over 2 years the author recovered *Past. pseudotuberculosis* from 7 turkeys, a hen, a pigeon, a parrot and a toucan (*Selenidera maculirostris*). In most cases the characteristic P.M. lesions were noted. The condition was often associated with helminth infestation and poor feeding and management. On one farm the

infection appeared to be endemic and responsible for sporadic losses among turkeys. The isolated organisms were kept on agar slopes for 2 years, without subcultivation, at room and at refrigeration temperatures, and retained their virulence for g. pigs.—M. GITTER.

SUHACI, I., NEDELCIU, D. & URSACHE, R. (1956). Un vaccin antiholeric aviar cu calităţi imunogene sueprioare. **[Fowl cholera vaccine with high immunogenic qualities.]**—*Anu. Inst. Seruri Vaccin. Pasteur, Bucuresti* **1,** pp. 211-221. [In Roumanian. French, German and Russian summaries. Abst. from French summary.] **2915**

Addition of aluminium hydroxide gel to cultures of pasteurella improves the immunogenic qualities of the vaccine. These are improved still further when the organisms are killed by 2½% formol and concentrated by removal of the supernatant broth. A large number of strains should be used on account of the superior antigenic qualities of certain strains.—M.G.G.

WINSØ, S. (1957). Fall av pseudomonasenterit hos svin. [*Pseudomonas* **enteritis in pigs.**]—*Medlemsbl. Sver. VetFörb.* **9,** 104. **2916**

An account of an outbreak with sudden severe diarrhoea in pigs, 3–4 months old, in a fattening herd of about 500. P.M. examination revealed haemorrhagic enteritis with severe swelling and hyperaemia of the mesenteric lymph nodes, and a foul-smelling intestinal content; the spleen was moderately enlarged, with petechiae. *Pseudomonas pyocyanea* was isolated in pure culture from the intestinal content, the mesenteric lymph nodes and the spleen. The heart blood was negative. The strains isolated were resistant to 6 antibiotics and to nitrofurantoin and only slightly sensitive to streptomycin and to a sulphonamide. The infection did not appear to be food-borne, as the same food was used for the whole herd, whereas the outbreak was restricted to the pigs in two "boxes". Bacteriological examination of food samples did not yield dominant cultures of pseudomonas.—F.E.W.

ADLER, H. E. & YAMAMOTO, R. (1956). **Studies on chronic coryza (Nelson) in the domestic fowl.**—*Cornell Vet.* **46,** 337-343. **2917**

Typical chronic coryza was experimentally reproduced by intranasal infection with *Haemophilus gallinarum,* isolated from a field case of the disease, combined with nasal exudate from turkeys inoculated with avian strains of pleuropneumonia-like organisms. Neither *H. gallinarum* alone nor cultures of P.P.L.O. alone or in combination with the bacterium, were capable of causing chronic coryza. 60 fowls, aged 3–32 weeks, were used in the experiments. The results were said to confirm the original work of Nelson [see *V.B.* **7,** pp. 519-520.]—R.M.

WHITE, F. (1957). **An outbreak of mastitis in cattle and death of calves due to infection with an organism of the Friedlander group (Klebsiella).**—*Vet. Rec.* **69,** 566-568. [Author's summary modified.] **2918**

An organism of the Friedländer group was responsible for 4 cases of mastitis in dairy cattle. The infection spread to calves by a route other than ingestion of infected milk. Treatment of calves with chlortetracycline failed, but three of the cows were cured clinically and bacteriologically with neomycin, chlortetracycline, and chloramphenicol respectively. Because of the multiplicity of strains involved and their varying drug sensitivity, the choice of drug for treatment must depend on sensitivity tests. New-born calves appear to be highly susceptible to the infection and older ones more resistant.

KRAUS, H. (1957). Zum möglichst sicheren und schnellen Nachweis von coliformen Bakterien und Dyspepsiecoli in Stuhlproben, Milch und Wasser. **[Reliable and rapid demonstration of coliform bacteria and *Escherichia coli* in faeces, milk and water.]** *Zbl. Bakt. I. (Orig.)* **168,** 21-24. [English, French and Russian summaries.] **2919**

The preparation of media containing triphenyltetrazolium chloride is described, suitable for the demonstration of coliform bacteria. By means of the rapid tube agglutination test *E. coli* could be demonstrated in suspected samples within 4–10 hours.—M.G.G.

MILLER, C. P., BOHNHOFF, M. & RIFKIND, D. (1957). **Experimental study of increased susceptibility to *Salmonella* infection following antibiotic therapy.**—*Science* **125,** 749. **2920**

An investigation of the increased susceptibility of mice to oral *S. enteritidis* infection after a large single oral dose of streptomycin led to the preliminary conclusion that this phenomenon may be due to the suppression of certain Gram-negative, non-sporulating, streptomycin-sensitive anaerobes in the gastro-intestinal tract of the mouse, which normally counteract the establishment of that infection.—G. P. MARSHALL.

HARRIS, M. E. & WILLIAMS, J. E. (1957). **The haemagglutinating properties of *Salmonella***

typhimurium.—*Amer. J. vet. Res.* **18,** 432-436. [Authors' summary modified.] **2921**

The ability of *S. typhi-murium* to agglutinate r.b.c. of fowls and turkeys and other animal species, is described. The haemagglutinin was demonstrable in 17 of 22 strains of the organism. Haemagglutininating activity was destroyed by heating culture suspensions at 80°C. for one min., and it tended to lessen or disappear in cultures maintained at room temp. Formalin preserved the haemagglutinin. The principle is apparently closely bound to the bacterial cells and is not diffusible. Efforts to release it by freeze-thaw techniques and saline washing were not successful. These findings indicate the necessity of carefully selecting strains of *S. typhi-murium* free from haemagglutinating activity for the production of diagnostic antigens for use with whole blood of fowls and turkeys.

I. Gilfillan, R. F., Holtman, D. F. & Ross, R. T. (1956). **Modification of pullorum disease in the chick by certain tricarboxylic acid cycle inhibitors and intermediates.**—*J. Bact.* **72,** 620-623. **2922**

II. Gilfillan, R. F., Holtman, D. F. & Ross, R. T. (1956). **Influence of *Salmonella pullorum* infection on various liver tricarboxylic acid enzymes and citrate levels in the chick.**—*Ibid.* 624-627. **2923**

I. The survival time of chicks infected with *Salmonella pullorum* was reduced by the administration of fluoroacetate, malonate, arsenite, citrate and succinate. This survival time varied with concentration, time of administration in relation to infection, and the dosage interval. The blood of the treated birds eventually yielded greater numbers of the organism than did that of untreated birds.

II. Citric acid concentration was measured in the liver of normal chicks, with and without fluoroacetate administration, and chicks infected with *S. pullorum*, with and without fluoroacetate treatment. There was evidence that the infection caused varying degrees of impairment of the liver tricarboxylic acid enzymes assayed during the course of the disease.

—D. S. Papworth.

Gerriets, E. & Brosell, H. J. (1957). Therapieversuche an Küken bei experimenteller S. pullorum-Infektion mit wirkstoffhaltigen, höheren einheimischen Pflanzen. **[Experimental treatment of *Salmonella pullorum* infection with indigenous German plants.]**—*Berl. Münch. tierärztl. Wschr.* **70,** 152-154. [English summary.] **2924**

Preliminary tests *in vitro* revealed marked bacteriostatic action by *Tropaeolum maius* (nasturtium), *Lepidium sativum* (garden cress), *Allium schoenoprasum* (chive), *Allium sativum* (garlic), *Allium cepa* (onion), and *Cochlearia armoracia* (horse radish) on *S. pullorum, Pasteurella septica, Staphylococcus aureus, Streptococcus lactis* and *Escherichia coli*.

Five groups, each of 50 day-old chicks, were experimentally infected with *S. pullorum*. For the next 14 days 4 of the groups each received a different plant finely chopped and mixed into their food. The mortality rate in the control group was 58%, in the chicks receiving *L. sativum* 32%, in those receiving *T. maius* 38%, in those receiving *A. schoenoprasum* 50%, and in those receiving *A. sativum* 74%. [See also *V.B.* **26,** 1351.]—M.G.G.

Albert, O. H. (1957). Untersuchungen über das Vorkommen von Salmonella-Bakterien in Eiprodukten ausländischer Herkunft. **[Incidence of salmonella in foreign egg products.]**—*Berl. Münch. tierärztl. Wschr.* **70,** 165-168. [English summary.] **2925**

Of 39,502 samples of egg products imported into Germany during 1956, 1,976 (5%) yielded salmonella, of 21 serotypes. *S. thompson* was by far the commonest, 70% of the strains belonging to this type. Most samples were of frozen or dried egg. Of 1,083 samples of liquid yolk, however, only one yielded salmonella. 16% of the samples of American origin were contaminated, most of the infected samples coming from one consignment, and 6% of those of Yugoslavian origin, 5% of Dutch origin, 5% of Chinese origin, 3% of Italian origin and 0·07% of Polish origin were contaminated.—M.G.G.

van Oye, E., Deom, J., Vercruysse, J. & Fasseaux, P. (1957). Trois nouveaux sérotypes du groupe *Salmonella* isolés au Congo Belge (*S. tshiongwe*=6,8:e,h:e,n,z **15,** *S. gwaai*=21:z 4, z 24—et *S. moero*=28:b:1, 5). **[Three new serotypes of *Salmonella* isolated in the Belgian Congo.]**—*Ann. Inst. Pasteur* **92,** 839-842. [English summary modified.] **2926**

Three new serotypes have been isolated: *S tshiongwe* from an ox, *S. gwaai* from a donkey, and *S. moëro* from a sheep. They were recovered from the mesenteric lymph nodes of the animals at the abattoir.

Tolnai, G. (1957). **Investigations into the antigenic composition of the salmonella group.**—*Acta microbiol. Acad. Sci. Hung.* **4,** 217-226.

[In English. Author's summary modified.] **2927**

The total content of nitrogen and polysaccharide was determined, by paper chromatography, in trichloracetic acid extracts of 16 *Salmonella* strains belonging to different groups of the Kauffmann-White scheme, and of acetone-treated bacterial powder of *S. typhi* Strain Ty_2. The total nitrogen content varied from 2–3%. Hydrochloric acid hydrolysates of each strain contained the same 12 amino-acids; *S. coli* also contained proline, as the 13th amino-acid. The polysaccharide content of the extracts varied from 10·2 to 34·8 mg. per 100 g. Sulphuric acid hydrolysates also showed qualitative differences, in accordance with the serological types of the Kauffmann-White scheme. The bacterial powder and the hydrolysed Boivin extract of Strain Ty_2 contained the same amino-acids and simple sugars.

VERGE, J. & PARAF, A. (1956). Contribution à l'étude du phénomène de blocage immunitaire. **[Immunological tolerance.]**—*C. R. Soc. Biol., Paris* **150,** 1905-1908. **2928**

Twelve rabbits were inoculated i/p on the 1st and 3rd, or 2nd and 4th days after birth with a suspension of killed *Salmonella typhimurium*. Ten weeks later they and 6 controls received an i/v injection of the antigen. Antibody titres rose sharply to about 1:800, the highest titres occurring on the 7th day after injection in the experimental rabbits and on the 14th day in the controls. Three possible explanations are offered for this unexpected result: salmonella antigen remains for some time in the body; there must be an affinity between antigen and certain proteins in the body for immunological tolerance; rabbits are not suitable for the study of this phenomenon.—M.G.G.

TRILENKO, P. A. (1957). **[New modification of the complement fixation test for the diagnosis of brucellosis.]**—*J. Microbiol., Moscow* **28,** Suppl. pp. 43-44. [In Russian.] **2929**

Serum under test was inactivated at 63°C. for 30 min. The mixture of antigen, serum and complement was kept at 0° to 4°C. for 16–18 hours and then at room temp. for 10–20 min. before adding the haemolytic system. [The technique was similar to that described by T. for the diagnosis of vibriosis: see *V.B.* **26,** 1896.] In 2,015 cattle in 19 herds, this test detected 526 reactors, compared with 400 reactions to the ordinary c.f. test and 240 reactions to the agglutination test. The results do not appear to have been controlled by P.M. examinations. It was stated that sera from horses, sheep and human beings were also tested, but there are no details. —R.M.

VAN DRIMMELEN, G. C. (1956). **Strain 19 brucella vaccine. I. Production of vaccine by the shake flask technique. II. The preparation of freeze-dried live vaccine.**—*Onderstepoort J. vet. Res.* **27,** 205-214 & 215-225. **2930**

I. A method is described for the production of *Br. abortus* Strain 19 vaccine by a shake flask aerated liquid culture technique. Shake flasks of 450-ml. lots of medium seeded with agar surface-grown cultures are harvested after 66 hours' incubation when a final count of $150-200\times10^9$ viable organisms per ml. can be obtained. No variants have been observed and results have agreed entirely with those from surface culture vaccines. This technique permits a greatly increased output at reduced price.

II. The development is described of a concentrated freeze-dried brucella vaccine which can be issued with the guarantee of 60×10^9 viable organisms per dose viable for an extended period. Concentration of the organisms grown by the aerated liquid culture method is achieved through sedimentation by means of 0·05% sodium carboxyl-methyl-cellulose which also promotes the survival rate after freeze-drying and during storage.—A. ACKROYD.

GILMAN, H. L. & HUGHES, D. E. (1957). **The relative immunity to brucellosis of calves vaccinated intradermally compared to those vaccinated subcutaneously.**—*Cornell Vet.* **47,** 291-301. **2931**

Brucella abortus vaccine Strain 19 was used and the animals were challenged in the 4th month of pregnancy by instillation of a virulent strain into the conjunctival sac.

Of 13 animals vaccinated i/d, 5 aborted and *Brucella abortus* was isolated from them. Of 13 vaccinated s/c, 1 aborted. The organism was recovered from this and from 2 other cows which calved at full term. Of 4 unvaccinated controls, 3 aborted and the organism was isolated from each one. The fourth cow gave birth to a viable calf and remained free from infection.

—T.E.G.R.

WEGENER, K. H. & BÖRGER, K. (1957). Beitrag zur Selektivfärbung von Brucellen. **[Selective staining of brucella.]**—*Zbl. Bakt. I. (Orig.)* **167,** 415-416. **2932**

A modified method for selective staining of brucella was described, using diluted carbol fuchsin, 0·5% sulphuric acid and 3% methylene

blue. It was found that, if 0·5% acetic acid were used, the milk smear would become detached from the slide.—M.G.G.

ABERNATHY, R. S., HALBERG, F. & SPINK, W. W. (1957). **Studies on the mechanism of chlorpromazine protection against brucella endotoxin in mice.**—*J. Lab. clin. Med.* **49,** 708-715. [Authors' summary modified.] **2933**

Chlorpromazine prolonged the survival time of intact or adrenalectomized mice challenged with lethal doses of brucella endotoxin. This protective effect did not appear to be critically dependent upon the corticoid-stimulating, sedative, adrenolytic, antihistaminic, and hypothermic effects of the drug. The possible neurogenic mechanisms of the protection are discussed.

WEIMER, H. E., REDLICH-MOSHIN, J., QUINN, F. A. & NELSON, E. L. (1957). **Serial determinations of serum glycoproteins following antigen injection into previously immunized animals.**—*J. Immunol.* **78,** 1-4. [Authors' summary modified.] **2934**

The effects of antigen administration on the serum concentrations of total glycoprotein, seromucoid, γ-globulin protein were determined in g. pigs previously immunized with heat-killed *Brucella suis*. To evaluate the effects of the repeated bleedings normal animals were bled at weekly intervals. The concentrations of all the serum components rose and remained high throughout the maximal antibody response. Repeated bleedings were not a factor. The possible causes of the increases are discussed.

BOUVIER, G. (1957). La brucellose du mouton et de la chèvre en Suisse. **[Brucellosis of sheep and goats in Switzerland.]**—*Schweiz. Arch. Tierheilk.* **99,** 247-253. [In French. English, German and Italian summaries.] **2935**

The history of brucellosis in Switzerland is in 3 phases. It appears to have been introduced into the country in 1948. From that year until 1950 abortions were frequent and the organism could be isolated from foetuses, placentas and milk. A period of apparent stability followed; infections were mostly chronic, but the disease continued to spread. In 1955 and 1956 the acute infection broke out again over a wide area; human beings and cattle were also affected. The disease will become endemic in Switzerland, unless every infected flock is detected and slaughter rigorously carried out.—M.G.G.

I. YAKOVLEV, L. A. & YAKOVLEVA, A. G. (1956). **[Experimental brucellosis and immunity to brucellosis in sheep.]**—*Trud. saratov. zoo.-vet. Inst.* **6,** pp. 10-14. [In Russian.] **2936**

II. YAKOVLEV, L. A. & POKROVSKII, I. A. (1956). **[Comparative value of methods of diagnosing brucellosis in sheep.]**—*Ibid.* pp. 15-17. [In Russian.] **2937**

I. The incubation period of experimental brucellosis in sheep ranged from 4–27 days. Abortion occurred 12–31 days after infection. Not one of the diagnostic methods (agglutination, c.f., and allergic tests) detected all infected sheep when used alone. *Br. melitensis* was present in the blood of most sheep after infection, but the onset and duration of bacteraemia varied enormously.

The c.f. test remained positive more constantly and for longer than the agglutination test. In some animals positive c.f. reactions occurred earlier than positive agglutination reactions, but in the majority the opposite occurred; the c.f. test did not detect all infected sheep. Administration to sheep recovered from experimental infection of 100,000 minimum infective doses revealed the presence of a high degree of resistance, but not absolute immunity. The same dose administered to 4 sheep recovered from natural infection did not result in reinfection. In most cases this repeated infection did not lead to an increase in the antibody content of the blood.

II. Whenever possible each sheep should be tested by the agglutination, allergic and c.f. tests. It was necessary to find an allergen more sensitive than brucella lysate, and a more accurate serological test, before the c.f. test could be dispensed with.—R.M.

SOKOLOVA, T. P. (1956). **[Phosphorus compounds in the blood and organs of sheep with brucellosis.]**—*Trud. novocherkassk. zoo.-vet. Inst.* **9,** pp. 102-108. [In Russian.] **2938**

Between the second and fourth months after infection with *Br. melitensis*, the amount of inorganic phosphorus in the blood of sheep increased from 4–5 mg.% to 7–8 mg.%, and subsequently returned to normal. There was no detectable difference in the amounts of adenosinetriphosphoric acid in blood and muscle between infected and healthy sheep.—R.M.

UTZIG, J. & FERTIG, S (1957). Wpływ kwasów polyporenowych na wzrost pałeczki *Brucella*. **[Effect of extracts of the fungus *Polyporus betulinus* on the growth of brucella.]**—*Méd. vét., Varsovie* **8,** 268-269. [In Polish.] **2939**

Benzene and ether extracts of *P. betulinus*

inhibited completely the growth of brucella in liquid and on solid media. Further work is in progress.—M. GITTER.

ANCZYKOWSKI, F. (1956/57). Bruceloza u drobiu. I. Krytyczny przegląd piśmiennictwa. **[Avian brucellosis. I. Review of the literature.]**—*Méd. vét., Varsovie* **12,** 326-327; 396-402; 460-464; 529-534; 587-591; 649-653; 713-715; **13,** 14-16. [In Polish.] **2940**

In the light of the author's interpretation of the highly controversial literature it would appear that the infection of domestic and some wild birds with *Brucella* is much more widespread and frequent than was formerly believed. The condition has been more frequently reported from Eastern countries than from other parts of the world. Among domestic birds the guinea-fowl appears to be the most susceptible to infection. All three types of brucella can be responsible for infection, *Br. melitensis* being a little more pathogenic than the other two. The pathogenesis of avian brucellosis remains obscure. Infection takes place through the digestive tract. The disease is usually asymptomatic and only occasionally produces a clear clinical picture. There is, however, in nearly all cases some wasting and drop in egg production. The infected birds eliminate the organism in about 30 days, acquiring some degree of immunity. Pathological changes are necrosis and degeneration in various organs (liver, spleen, heart, lungs). Diagnosis has been based up to now on agglutination tests; the specific agglutinins are demonstrable up to 3½ months after infection, seldom longer. No effective treatment has yet been found.—S. TERLECKI.

STANZIALE, W. G. (1957). ***In vitro* bactericidal activity of blood for *Pasteurella tularensis*.**—*J. Immunol.* **78,** 156-159. [Author's summary modified.] **2941**

The bactericidal activity of mammalian whole blood for *Brucella tularensis* was determined. It varied among the species tested. The whole blood of the cow, dog, and sheep showed significant bactericidal activity resulting in a decrease of 1 log. in the number of bacteria inoculated; that of the g. pig, man, monkey (*Macacus*), mouse, rabbit, and white rat was much less active. Dog's blood was equally effective against concentrations of bacteria of 10^1 to 10^7 organisms per ml. of final test mixture. Bactericidal activity correlated to some degree with the resistance of the species to experimental infection with *Br. tularensis*. The bactericidal complex in dog's blood is in the plasma fraction. The results do not suggest that the complex resides in the cells and diffuses into the plasma, where its effect is demonstrated.

MOCHMANN, H. (1957). Leptospirenuntersuchungen an Haustieren. **[Leptospirosis in domestic animals.]**—*Berl. Münch. tierärztl. Wschr.* **70,** 181-185. [English summary.] **2942**

Of 1,182 horse sera examined at Rostock, 370 (31%) had agglutination titres of over 1:400 to *Leptospira* infections, 216 of these for *L. grippo-typhosa*. Of 1,045 dogs 364 (35%) were positive, 226 for *L. canicola;* of 285 cattle 27 were positive, 13 for *L. canicola;* 29 of 252 pigs, 14 of 347 sheep, and 16 of 259 fowls were positive—chiefly for *L. ictero-haemorrhagiae*. Two of 15 cats were positive for *L. canicola* and one of 12 geese for *L. grippo-typhosa*.—M.G.G.

WIESMANN, E. (1957). Die Rinder-Leptospirose. **[Bovine leptospirosis.]** — *Schweiz. Arch. Tierheilk.* **99,** 132-140. [English, French and Italian summaries.] **2943**

The epidemiology, pathogenesis, clinical picture, diagnosis, treatment and prophylaxis of bovine leptospirosis are reviewed briefly. No case has been demonstrated in Switzerland yet, but it is considered probable that some have occurred.—M.G.G.

GENTILE, G. (1956). Epato-nefrite itterigena leptospirotica del cane (Weil canino). II. Meccanismo patogenetico dell'ittero. **[Leptospiral icteric hepato-nephritis in dogs. II. The pathogenic mechanism of jaundice.]**—*Zooprofilassi* **11,** 817-831. **2944**

The blood bilirubin in the course of leptospirosis in dogs was studied by a fractionation method (based on alcohol solubility). This method is considered of value in following the course of infection and in the differential diagnosis of jaundice. Values obtained and anatomical, clinical and laboratory observations led to the conclusion that jaundice in leptospirosis in dogs is of a mixed type—hepatic and mechanical.—T.E.G.R.

I. FÜZI, M., ALFÖLDY, Z., KISZEL, J. & RADITZ, I. (1957). Die Leptospiren-Infektion der Feldnagetiere in einem gebiet von Westungarn. **[Leptospirosis in field rodents in Western Hungary.]**—*Acta microbiol. Acad. Sci. Hung.* **4,** 155-166. [In German.] **2945**

II. KISZEL, J., ALFÖLDY, Z. & FÜZI, M. (1957). Untersuchung der Leptospiren-Infektion von Nagetieren in einer Gemeinde von Südostungarn. **[Leptospirosis in rodents in South-**

East Hungary.]—*Ibid.* 167-173. [In German.] **2946**

I. In the district of Hansag, where *L. grippo-typhosa* infection had broken out in farm labourers, 467 field rodents were collected—452 *Microtus arvalis*, 8 *Apodemus sylvaticus* and 7 *Cricetus cricetus*. Leptospira were isolated by culture from the kidneys of 32 field-mice, one wood-mouse and one wild hamster; 29 of the 34 strains were identified as *L. grippo-typhosa*. One strain, isolated from a field-mouse, was antigenically related to *L. sejroe*, and considered as belonging to the Hebdomadis group. There was a close connexion between infection and increasing age in mice; no young ones were found infected. There was no association between infection and sex.

II. After an outbreak of leptospirosis in farm-workers in South-East Hungary, in which serological reactions for both *L. sejroe* and *L. pomona* were obtained, 131 field rodents, of 4 species, were captured. All were negative. In the following summer 271 rodents were collected. Leptospira were isolated only from 2 *Apodemus sylvaticus*. The 2 strains were antigenically related to *L. sejroe*, and cross agglutination tests showed them to be identical. They were not pathogenic for young g. pigs. Agglutination tests with patients' sera, stored since the previous year, indicated that leptospira of this type were responsible for the outbreak. As no leptospira were recovered from rodents caught near human habitations, it is suggested that domestic animals may have been concerned in the outbreak.—M.G.G.

Steigner, K. F. (1957). Leptospirose als Berufskrankheit. Übersichtsreferat. **[Leptospirosis as an occupational disease. A review.]**—*Zbl. Bakt. I.* (Ref.) **162**, 431-463. **2947**

Of all the infectious diseases the *Leptospira* infections are considered to be the most closely linked with occupation, except for *L. canicola* infection, which is usually contracted from dogs. A table is presented of *Leptospira* species, their animal hosts, and the people exposed to infection in the course of their work. These include in particular animal attendants, farm-labourers, miners, dockers, seamen, workers in sewers, and people handling dead animals and their skins. The incidence of leptospirosis in various occupations is given. The discussion of the literature included the contraction of infection through the unbroken skin, the incubation period and diagnosis in man, and the incidence of *Leptospira* species in different animals. It is recommended that leptospirosis should be a notifiable disease. There are 211 references.—M.G.G.

Bühlmann, X. & Boller, H. (1957). Ein Fall von Euterentzündung beim Rind, hervorgerufen durch eine Infektion mit *Clostridium welchii*. **[Mastitis in a cow caused by *Clostridium welchii*.]** — *Schweiz. Arch. Tierheilk.* **99**, 254-257. [English, French and Italian summaries.] **2948**

Acute mastitis developed in a cow 3 days after calving. An organism was isolated which was shown to be *Cl. welchii* by its cultural and biochemical properties. Treatment with high doses of antibiotics, chiefly penicillin, brought about rapid recovery.—M.G.G.

Guillaumie, M., Kréguer, A. & Devisme, M. (1957). Durée de l'immunité anti-oedematiens consécutive à quelques inoculations d'anatoxine oedematiens. **[Duration of immunity to *Clostridium oedematiens* after injections of toxoid.]**—*Bull. Acad. vét. Fr.* **30**, 43-49. **2949**

Six pigs were given 2 s/c injections each of 5 ml. of *Cl. oedematiens* toxoid, with an interval of 18 days between injections. Eleven days later their serum contained 0·5–4 i.u. of specific antitoxin per ml., but after 7 months the content was not more than 0·05–0·1 i.u./ml. A second vaccination 5–6 months after the first is recommended. Of 15 horses and mules which received, within 10 days, 4 injections of a mixture of *Cl. oedematiens* and *Cl. welchii* toxoids, 12 still had measurable anti-*Cl. oedematiens* activity in their serum 18 months later.—M.G.G.

Arasaratnam, R. (1956). **Tetanus in cattle: a report of two cases.**—*Ceylon vet. J.* **4**, 81-82. **2950**

After removal of some warts and injection of a formolized suspension of the ground up tissue in 5 heifers, 3 became ill within 10 days, with symptoms of frequent tympany of the rumen, and died. The other two also showed similar symptoms but developed positive signs of tetanus on the 5th day of their illness. In spite of treatment, both also died.

—A. Ackroyd.

Prévot, A. -R. & Sillioc, R .(1957). Nouvelles recherches sur le botulisme du vison et du furet et la vaccination antibotulique de ces mustélidés. **[Studies of botulism in mink and ferrets, and vaccination against botulism.]**—*Bull. Acad. vét. Fr.* **30**, 93-98. Discussion: pp. 98-102. **2951**

Four outbreaks of botulism in mink with high and rapid mortality were studied. Cβ toxin was demonstrated in the dead animals and, on one farm, in the horse-meat fed to them. In

one outbreak, in which 974 of the 1075 mink died, 10 which had previously received Cβ toxoid were unaffected. On another farm 15 sick animals recovered after treatment with Cβ antiserum followed by Cβ toxoid. Experimental studies revealed that ferrets are very resistant to A, B and E toxins, yet neither humoral nor tissue antibodies could be detected. They are, however, sensitive to Cβ toxin. Ferrets given 3 s/c injections of Cβ toxoid at fortnightly intervals were challenged 10 days after the last injection with 20–100 m.l.d. of Cβ toxin. A mink similarly treated was challenged with 10 m.l.d. All remained healthy. Their serum contained 0·5–1 unit of Cβ antitoxin per ml.—M.G.G.

Weikl, A. (1957). Beitrag zur Vibrioneninfektion des Rindes. [*Vibrio fetus* **infection in cattle.**]—*Berl. Münch. tierärztl. Wschr.* **70,** 136-137. [English summary.] **2952**

Of 2,100 samples received from cases of abortion in cattle in Bavaria and Swabia since the end of 1954, 103 (5%) were found to contain *V. fetus*.—M.G.G.

Nosov, I. I. (1956). [**Symptoms, aetiology and prophylaxis of foot rot epidemics in sheep in the Leningrad area.**]—*Bull. nauchno-tekh. Informatsii, Leningrad. nachno-issled. vet. Inst.* No. 1. pp. 16-20. [In Russian.] **2953**

The microflora of 153 cases of foot rot varied greatly. The commonest organisms isolated were staphylococci, streptococci and sarcina. Less common were *Proteus vulgaris, E. coli, B. subtilis, Spirillum volutans* and *F. necrophorus*. In N.'s experience the disease did not spread from one sheep to another under good conditions of feeding, management and pasturing, but could be transmitted by placing material from affected feet on healthy feet. One method of treatment consisted of dressing affected sheep with a mixture of 100 parts tar, 10 parts turpentine and 25 parts fish oil once every 3–5 days: 37 of 87 sheep recovered after 2 or 3 dressings and 50 recovered after 4–7 dressings. Another method employed a soln. of 20–25,000 units/ml. penicillin in 1% procaine soln., of which 2–3 ml. were injected s/c 2–3 cm. above the coronary band "by the method used for vascular block." Out of 226 sheep, 209 recovered within 3 days after one treatment, and the remainder recovered after two treatments.—R.M.

Rahman, A. (1957). **The sensitivity of various bacteria to chemotherapeutic agents.**—*Brit. vet. J.* **113,** 175-188. **2954**

The relative potency of penicillin, oxytetracycline, chlortetracycline, chloramphenicol and sulphadimidine against various strains of 15 micro-organisms, including several species of *Streptococcus, Corynebacterium* and *Salmonella,* as well as *Br. abortus, Past. septica* and *E. rhusiopathiae,* was tested *in vitro* in a milk agar medium containing 10% horse blood. *In vivo* sensitivity against the same agents was also estimated for *C. murium* and *Past. septica* infections in mice.—G. P. Marshall.

Uehleke, H. & Poetschke, G. (1957). Keimzählung und Ermittlung von Absterbevorgängen mit Hilfe von Membranfiltern. I. Eignung und Technik des Membranfilterverfahrens. [**Enumerating bacteria and determining the proportion of killed bacteria with the aid of membrane filters.**]—*Zbl. Bakt. I. (Orig.)* **168,** 141-151. [English, French and Russian summaries. English summary modified.] **2955**

The authors examined the suitability of membrane filters for the determination of death in micro-organisms under the action of chemical or physical agents. Provided that certain technical conditions were observed, counts of surviving bacteria were more accurate on incubated membrane filters than on agar plates. Moreover, this method had other advantages, which were examined and discussed. It would supplement the usual end-point methods in the evaluation of germicidal procedures, and give a more detailed knowledge of the process of dying in microorganisms.

C'Connor, R. T., McCall, E. R. & DuPré, E. F. (1957). **Differentiation of microorganisms by means of the infrared spectra of their acetone extracts.**—*J. Bact.* **73,** 303-313. [Authors' summary modified.] **2956**

A method for the differentiation of micro-organisms by comparing the infra-red spectra of aqueous acetone extracts instead of the spectra of the entire organisms is described. The procedure consists of six steps: (a) careful culture of the micro-organisms on the same medium and under standardized conditions, (b) disintegration of the bacterial cells with a mechanical grinder, (c) acetone extraction under controlled conditions, (d) preparation of smears of the extract on silver chloride discs, (e) measurement of the infra-red absorption spectra of the organisms on silver chloride discs against a plate containing no extract, and (f) comparison of the spectra of the acetone extract with the spectra of acetone extracts of known bacteria. The details are given of each step. The authors discussed the reproducibility of the method and

its advantages. The further advantages of successive extraction with a few carefully selected solvents are cited.

GALE, D. & SANDOVAL, B. (1957). **Response of mice to the inoculations of both *Candida albicans* and *Escherichia coli*. I. The enhancement phenomenon.**—*J. Bact.* **73,** 616-624. [Authors' summary modified.] **2957**

Prior inoculation of a non-lethal concentration of living *E. coli* either i/v or i/p protected mice from a lethal conc. of *C. albicans* injected i/v. I/p inoculation of non-lethal concentrations of *E. coli* after i/v inj. of a lethal conc. of *C. albicans* produced two contrary effects dependent on the conc. of *E. coli*: (1) a delay in the mean time of death (protective), and (2) a decrease in the mean period of survival (enhancing) as compared to *C. albicans* alone. Dead *E. coli* of any conc. tested had only the enhancing effect. As little as 1 μg. of O antigen extracted from *E. coli* by the Boivin technique was enhancing. The enhancement seemed to be caused by the toxaemia due to the endotoxin of *E. coli*. The possible mechanism of the enhancement phenomenon was discussed with reference to the properdin system.

LEVINE, S., ZIMMERMAN, H. M. & SCORZA, A. (1957). **Experimental cryptococcosis (torulosis).** — *Amer. J. Path.* **33,** 385-409. [Authors' summary modified.] **2958**

Experimental cryptococcosis was produced by subcutaneous, intracerebral, or intraperitoneal inoculation, using 3 strains of *Cryptococcus neoformans*. The subcutaneous lesions were characterized by early leucocytic response, abscess formation, encapsulation, healing, and only occasional dissemination. Lesions of the brain were characterized by proliferation of the yeast cells forming large lesions with minimal inflammation and with dissemination. More inflammation was noted in the meninges, but here, too, the reaction was weak and irregular. I/p inoculation resulted in moderate inflammatory response (usually most marked in the liver) and moderate dissemination and lethality. The predilection for the brain in disseminated infection was considered to be directly related to the minimal inflammatory response in cerebral tissue. The healing subcutaneous abscesses were not associated with active immunity against subsequent intracerebral challenge. The inflammatory response to s/c inoculation was abolished by cortisone, and to a lesser extent by X-irradiation. This was accompanied by increased dissemination of the infection.

ZABLOTSKII, T. M. (1956). **[Diagnosis of epizootic lymphangitis in horses by the complement-fixation test.]**—*Trud. mosk. vet. Akad.* **12,** pp. 26-36. [In Russian. Translation of author's summary, slightly modified.] **2959**

An autoclaved aqueous extract of cultures of *Histoplasma farciminosum*, treated with alcohol–ether for 24 hours, was a suitable and specific antigen for the c.f. and precipitin tests for the diagnosis of epizootic lymphangitis. In artificially infected horses, c.f. antibodies appeared a few days before the first clinical signs of the disease. The maximum conc. of c.f. antibody in the blood occurred during the first stage of development of the disease. At later stages the antibody level fell, and the c.f. test became negative even when ulcers were still present. In horses resistant as a result of previous infection, re-infection led to an intense increase in c.f. antibody in the blood, which lasted for 2–4 months.

MCPHERSON, E. A. (1957). **A survey of the incidence of ringworm in cattle in Northern Britain.**—*Vet. Rec.* **69,** 674-679. [Author's summary modified.] **2960**

In a survey of 30,766 cattle in 518 herds, 888 (2·89%) had ringworm caused by *Trichophyton verrucosum*. Of the herds 133 (25·7%) were affected. The overall incidence in calves was 7·34% and in adults 0·43%. In rearing herds the incidence was higher than in dairy or beef herds. The incidence did not appear to be influenced by season of the year, location of the herd, nutrition, the lighting of the cattle sheds, or the presence of lice.

BRIDGES, C. H. (1957). **Maduromycotic mycetomas in animals. *Curvularia geniculata* as an etiologic agent.**—*Amer. J. Path.* **33,** 411-427. [Author's summary modified.] **2961**

The literature on maduromycotic mycetomas in man and similar lesions in animals is briefly reviewed and discussed. Maduromycotic mycetomas are reported in 3 dogs and a horse. Three of the fungi were of the black-grained and one of the white-grained type. *C. geniculata* is identified as an aetiological agent of multiple maduromycotic mycetomas affecting the feet of the dog.

NEWING, C. R. (1956). **A further note on the use of the rapid slide test for the diagnosis of contagious bovine pleuropneumonia.** — *Bull. epiz. Dis. Afr.* **4,** 197-200. [French summary p. 228.] **2962**

Paired tests with the rapid slide agglutina-

tion test [see *V.B.* **24,** 66 & **26,** 780] and the complement-fixation test described by Campbell & Turner [*V.B.* **23,** 3308] were performed on 183 sera from vaccinated or experimentally infected cattle. There was a high degree of correlation between the two tests. [It was not possible to compare the results with the pathological changes.]—R.M.

Hyslop, N. St. G. & Ford, J. (1957) **Therapy of contagious bovine pleuro-pneumonia. I. Preliminary observations on the treatment of early cases by chloramphenicol.**—*Vet. Rec.* **69,** 521-525. **2963**

Four strains of the organism of bovine contagious pleuropneumonia isolated in East Africa, proved susceptible to chloramphenicol *in vitro*. A number of cattle were experimentally infected with the organism (a) by the s/c route and (b) by aerosol. Some animals in each group were thereafter treated with 2·5 g. of chloramphenicol per 500–600 lb. body wt. for 2 to 3 consecutive daily doses. All the treated animals survived and showed decreased serum antibody titres and less severe lesions, compared with the untreated controls. The importance of adequate dosage and the need for serological control of treatment were emphasized.—G. P. Marshall.

Doronin, N. N. (1956). **[Comparative trials of vaccines against caprine contagious pleuropneumonia.]**—*Trud. novocherkassk. zoo.-vet. Inst.* **9,** pp. 129-132. [In Russian.] **2964**

D. claimed that terpene aluminium hydroxide vaccine [see *V.B.* **26,** 2833] was superior to formol aluminium hydroxide vaccine. The terpene vaccine was inoculated into 7,789 goats in 23 flocks exposed to natural infection: 437 became infected, compared with 183 of 244 uninoculated controls. In another trial, 3 of 142 goats inocultaed with formol vaccine subsequently became infected, compared with 8 of 310 inoculated with terpene vaccine. These figures do not reveal much difference in the efficacy of the two vaccines, but it was claimed that fresh cases of infection ceased about 19 days after inoculation of a flock with terpene vaccine, and not until 31 days after inoculation with formol vaccine.—R.M.

Carter, G. R. & Schroder, J. D. (1955). **Pleuropneumonia-like organisms associated with pneumonia in swine.**—*Canad. J. comp. Med.* **19,** 219-220. **2965**

P.P.L.O. were recovered from the lungs of 14 and the serosae of 8 pigs under 2 months old having pneumonic lesions with or without fibrinous serositis; in most of the cases these were the only organisms recovered. The gross and microscopic changes in the lungs were suggestive of virus pneumonia though peribronchial lymphoid hyperplasia was not a prominent finding. The authors suggest that P.P.L.O. may be involved in the virus pneumonia complex and have possibly been overlooked so far.

—J. T. Done.

Pankevicius, J. A., Wilson, C. E. & Farber, J. F. (1957). **The debatable role of a pleuropneumonialike organism in the etiology of chronic pneumonia in rats.**—*Cornell Vet.* **47,** 317-325. [Authors' summary modified.] **2966**

Fourteen of a total of 25 rats obtained from a "normal" laboratory animal stock and affected with acute or chronic murine pneumonia harboured PPLO in their lungs, but the organism was not isolated from 50 Nelson rats (a strain established by Innes *et al.*). Nelson rats experimentally infected with PPLO *via* the bronchial tree remained so for periods of 6 months (the duration of the experiment). Transfer of PPLO into the lungs of a second and third series of rats was successful, with cultural recovery of the organism. Under the conditions of the experiment it was not possible to reproduce any phase of chronic pulmonary disease in the Nelson rats by PPLO; hence the role of PPLO in the aetiology of chronic murine pneumonia is highly questionable.

See also absts. **3089** (cultivation of spirochaetes from multiple sclerosis); **3091** (haemolytic E. coli from pigs with oedema disease); **3147** (report, Australia); **3148** (report, New Zealand); **3149** (report, North Borneo); **3150** (report, Nyasaland); **3152** (report Tanganyika); **3155** (report, Netherlands); **3156** (report, U.S.A.); **3157** (book, immunization against TB.).

DISEASES CAUSED BY PROTOZOAN PARASITES

Thiéry, G. & Morel, P. (1956). Amibiase pulmonaire chez un zébu. **[Pulmonary amoebiasis in zebu cattle.]**—*Rev. Élev.* **9,** 343-350. [English and Spanish summaries.] **2967**

P.M. examination of a young zebu slaughtered on account of generalized streptothricosis revealed amoebic infection of the lungs, the histopathology of which is described and figured.

—D. Poynter.

Robson, J. & Milne, A. H. (1957). **A preliminary trial with three new drugs as prophylactics against *Trypanosoma congolense* in zebu cattle.**—*Vet. Rec.* **69,** 564-566. **2968**

The drugs combine in part the structure of ethidium bromide or dimidium bromide and of antrycide and are designated RD2787, RD2801, and RD2902. Toxicity trials were carried out on 3 cattle, 3 mg./kg. body wt. as a 2% soln. being injected s/c. A week later there were severe local reactions, lasting about a month, and loss of wt. (12–16 lb.) which was regained 2 weeks later. No systemic disturbances were observed. The compounds were tested on Tanganyika zebu cattle with no previous history of trypanosomiasis, at a dosage level of 1 mg. and 2 mg. per kg. i/m. The animals were then challenged 2, 4 and 6 months after inoculation, with blood infected with *T. congolense*. RD2801 at 2 mg./kg. afforded protection for 6 months. The other 2 were somewhat less effective. In cases of breakdown the drugs appeared to lengthen the period between challenge and the appearance of trypanosomes in the peripheral blood.—T.E.G.R.

Newton, B. A. (1957). **The action of phenanthridines on nucleic acid and protein synthesis in a parasitic flagellate.**—*Biochem. J.* **66,** No. 2. pp. 27P of Proceedings. [Author's abst. modified.] **2969**

The action is described of 2:7-diamino-10-ethyl-9-phenylphenanthridinium bromide (ethidium bromide) on the synthesis of nucleic acid and protein in *Strigomonas oncopelti*. It was active only against growing organisms. Addition of the drug to cultures of organisms in the log. phase of growth did not immediately inhibit growth but reduced the rate of growth progressively; the number of cells was at least doubled before growth was finally inhibited. During the period of growth in the presence of the drug the deoxyribonucleic acid (DNA) content of the cells fell by a half whilst the ribonucleic acid (RNA) content remained almost constant. Conditions were determined permitting the synthesis of nucleic acids and protein by washed cell suspensions of *S. oncopelti;* glucose, purines, pyrimidines and a mixture of amino-acids were essential, little or no nucleic acid being synthesized in the absence of amino-acids or glucose. Preliminary experiments showed that ethidium bromide rapidly inhibits DNA synthesis whilst RNA and protein synthesis continues for about 3 hours after the addition of the drug. The uptake of ^{14}C-labelled ethidium bromide by organisms was studied under a number of conditions; it was dependent on, and followed, the course of RNA synthesis.

Sanders, M. (1957). **Replacement of serum for *in vitro* cultivation of *Tritrichomonas foetus*.**—*J. Prot.* **4,** 118-119. [Author's summary modified.] **2970**

The combination "Tween 80" and cholesterol replaced blood serum in culture media for *Trichomonas foetus*. Choline + potassium glycerophosphate enhanced growth in the presence of "Tween 80" + cholesterol. A method for ensuring adequate cholesterol suspension, an essential factor for consistent growth, is described.

Horton-Smith, C. & Long, P. L. (1957). **The effect of 2-amino-5-nitrothiazole, 2-acetylamino-5-nitrothiazole and furazolidone on the growth *in vitro* of *Histomonas meleagridis*.**—*Ann. trop. Med. Parasit.* **51,** 117-120. **2971**

2-Amino-5-nitrothiazole, 2-acetylamino-5-nitrothiazole and furazolidone all inhibited the growth of *Histomonas meleagridis* when in culture with bacteria of undisclosed species. It was considered that furazolidone was interfering with the growth of the associated bacteria.

—S. Brian Kendall.

Zimmermann, W. J. (1957). **Field studies on *Eimeria* species in Iowa chickens.**—*Poult. Sci.* **36,** 184-193. **2972**

Chickens on two Iowa farms were found, during a 2-year study, to be infested with six species of coccidia: *E. acervulina, E. brunetti, E. maxima, E. mitis, E. necatrix* and *E. tenella*. Only one clinical case of coccidiosis was noted during the two years, but 105 of 207 chickens examined had a patent infection. Observations were made on the relative numbers of oocysts passed in the faeces and the rate at which resistance to a particular species developed.

—S. Brian Kendall.

Van Doorninck, W. M. & Becker, E. R. (1957). **Transport of sporozoites of *Eimeria necatrix* in macrophages.**—*J. Parasit.* **43,** 40-43. **2973**

Sporozoites first enter the epithelial cells covering the villi of the chick small intestine, then proceed to the lamina propria and migrate in the direction of the muscularis mucosa. En route the majority become engulfed by macrophages which invade the fundal epithelial cells of the intestinal glands and disintegrate. No evidence was obtained of untoward effects of the macrophage on the sporozoite.

—D. Poynter.

Levine, L. & Herrick, C. A. (1957). **Effects of the cecal coccidia on the ability of Plymouth Rocks to do muscular work.**—*Poult. Sci.* **36,** 24-29. **2974**

In infected birds efficiency of the leg

muscles was impaired, with earlier onset of fatigue than in healthy controls. These effects were more pronounced in Single Comb White Leghorns than in New Hampshire × Barred Plymouth Rocks. It is believed that one of the important factors contributing to this muscular impairment is an effect on the nerve end plates or closely allied structures.

—S. Brian Kendall.

Gardiner, J. L. (1957). **The effect of aureomycin and low-level sulfamethazine, separately and in combination, on cecal coccidiosis.**—*Poult. Sci.* **36,** 159-165. **2975**

These experiments were designed to test the effect of aureomycin in offsetting the retardation of growth caused by "Sulfamethazine" (sulphadimidine) when used for the control of coccidiosis. At suitable concentrations aureomycin together with sulphadimidine prevented mortality from infection with *Eimeria tenella,* reduced the severity of the lesions and growth rate was better than that of healthy controls given no growth stimulant. Aureomycin itself, at a concentration of 200 g. per ton [? American] reduced mortality to the barest minimum, slightly reduced the severity of the lesions and promoted growth.—S. Brian Kendall.

Pavlov, P. (1957). La lutte contre les piroplasmoses dans les conditions actuelles et les résultats obtenus lors des recherches faites en Bulgarie. **[Studies of piroplasmosis in Bulgaria.]**—*Bull. Off. int. Epiz.* **47,** 66-73. **2976**

In this general account of the position in Bulgaria, P. lists the different species of piroplasms found in different host animals and mentions their geographical distribution. He discusses the clinical aspects of the disease, pathology, diagnosis, epidemiology, tick host relationships, prophylactic and therapeutic measures.—D. Poynter.

Ryley, J. F. (1957). **The chemotherapy of babesia infections.**—*Ann. trop. Med. Parasit.* **51,** 38-49. **2977**

This paper reports an investigation in which about 2,000 compounds were tested for therapeutic activity against *B. rodhaini* in mice. Some showing promise were further tested against *B. bovis* in splenectomized calves and against *B. canis* in splenectomized dogs. A phenyl derivative of antrycide (Compound 10,073) was the most satisfactory. It was considered that *B. rodhaini* infections in mice could be used as a useful initial index of activity but that the relative activity of different compounds in mice is not necessarily replicated in other infections.

The drug 10,073 is reported to show activity against *Babesia gibsoni* as well as *B. canis* in the field.—S. Brian Kendall.

Chaikina, O. A. (1955). **[Effect of intramuscular administration of trypaflavine on sheep.]**—*Trud. mosk. vet. Akad.,* **9,** pp. 195-205. [In Russian.] **2978**

This detailed experimental and pharmacological study demonstrated that trypaflavine (euflavin) could be administered intramuscularly to sheep at a dosage of 2·5 mg./kg. body wt., as a 5% aqueous soln. Previously only the intravenous route had been used in the treatment of piroplasmosis.—R.M.

Simitch, T., Petrovitch, Z., Bordjochki, A. & Pop-Cenitch, S. (1957). Contribution à la connaissance de la biologie de *Toxoplasma gondii* chez le chien. (Note préliminaire). **[Experimental infection of dogs with *Toxoplasma gondii*.]**—*Arch. Inst. Pasteur Algér.* **35,** 24-30. **2979**

Experimental infection with *T. gondii* was successful in all of 10 dogs, aged 2–12 months, infected intracranially, in 3 of 5 puppies infected intraperitoneally, in 4 of 6 puppies infected subcutaneously, in 2 of 6 puppies infected by mouth, but not in 3 adult dogs infected intravenously. Four animals developed acute toxoplasmosis. *T. gondii* was demonstated by microscopic examination or inoculation into sousliks (*Citellus citellus*) of tissues from the brain, lung, liver and spleen.—M.G.G.

Takos, M. J. (1957). **Notes on sarcosporidia of birds in Panama.**—*J. Parasit.* **43,** 183-185. [Author's summary modified.] **2980**

Three new avian hosts of *Sarcocystis* sp. were found in Panama: the squirrel cuckoo (*Piaya cajana thermopila*), short-billed toucan (*Rhamphastos piscivorus brevicarinatus*), and collared aricari (*Pteroglossus t. torquatus*). The parasite was also found in a Ghiesbrecht's hawk (*Leucopternis ghiesbrechti costaricensis*), which has previously been reported as a host. Four of 36 birds examined were found to be infected. An unsuccessful attempt was made to culture the *Sarcocystis* of the collared aricari on media suitable for fungi.

See also absts. **3147** (report, Australia); **3150** (report, Nyasaland); **3151** (report, Federation of Rhodesia & Nyasaland); **3152** (report, Tanganyika).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

JANSEN, J. (1957). Besmetting met vaccine en mond- en klauwzeervirus bij de cavia. **[Influence of vaccinia virus on infection with foot and mouth disease in g. pigs.]**—*Tijdschr. Diergeneesk.* **82,** 31-41. [English, French and German summaries.] **2981**

J. failed to detect antagonism between vaccinia virus and the virus of F. & M. disease, as reported by Gildemeister & Helm [*Zbl. Bakt. I (Orig.)* **125,** 405 (1932)]. F. & M. disease virus developed particularly rapidly in the foot pad of g. pigs recently inoculated (by scarification of another foot pad) with vaccinia virus, and in those recovering from vaccination. There was no cross immunity between the two viruses. [See also *V.B.* **4,** p.572.]—R.M.

TRAUB, E. & WITTMANN, G. (1957). Experimenteller Beitrag zur Klärung der Frage der Verbreitung des Maul- und Klauenseuche-Virus durch die Luft. **[Experimental study of air-borne infection with foot and mouth disease virus.]** — *Berl. Münch. tierärztl. Wschr.* **70,** 205-206. [English summary.] **2982**

Air from a byre containing cattle with F. & M. disease was led into a byre containing healthy calves and pigs. After 5 days' exposure the animals did not become infected and were later shown to be susceptible to the disease.

—M.G.G.

FELLOWES, O. N. & DIMOPOULLOS, G. T. (1957). **Isolation of vesicular stomatitis virus from mouse mothers after inoculation of suckling mouse litters.**—*J. Bact.* **73,** 444-445. **2983**

During titration of New Jersey and Indiana types of vesicular stomatitis virus in baby Swiss albino mice, a few of the uninoculated mothers of the mice given New Jersey virus died. Deaths occurred 5–7 days after intra-abdominal inoculation of the litters. No symptoms were observed. Brain and muscle tissue was taken from 2 of the dead mothers. C.f. tests and inoculation into chick embryos and unweaned mice revealed New Jersey virus. Two possible ways of infection are suggested: injury of the mammary gland, and licking the anal region of the baby mice.

—M.G.G.

USTENKO, V. S. (1957). **[Survival of the virus of Aujeszky's disease.]**—*Veterinariya, Moscow* **34,** No. 3. pp. 74-75. [In Russian.] **2984**

The virus of Aujeszky's disease survived on wooden boards for 24–28 days in summer, and 46–49 days in winter. On infected farms, thorough cleaning and disinfection of the animal houses is recommended, and the removal of sick and suspected animals.—M.G.G.

AVELLINI, G. (1957). La tetraciclina nella pseudorabbia (M. di Aujeszky) sperimentale del coniglio. **[Tetracycline in experimental Aujeszky's disease in rabbits.]**—*Zooprofilassi* **12,** 155-165. [French and German summaries.] **2985**

Tetracycline was ineffective against the virus of Aujeszky's disease *in vitro* and *in vivo*.

—T.E.G.R.

BELL, J. F., HADLOW, W. J. & JELLISON, W. L. (1957). **A survey of chiropteran rabies in western Montana.**—*Publ. Hlth Rep., Wash.* **72,** 16-18. **2986**

Rabies virus was demonstrated in 3 out of 127 captured bats, of 7 species. The infected bats were *Myotis californicus californicus, Eptesicus fuscus pallidus,* and *Lasiurus cinereus cinereus*. All 3 were ill or behaved abnormally. The titres of virus in the brains of mice inoculated with the 3 strains were low, and remained low even after several passages.—M.G.G.

POUL, J. & RAMPON, R. (1957). Variation de la virulence du virus rabique fixe pour le chien inoculé par la voie intracérébrale. **[Variation in virulence of fixed rabies virus for dogs by the intracerebral route.]**—*Arch. Inst. Pasteur Algér.* **35,** 40-42. **2987**

From 1952–56, in the course of 93 passages in the rabbit and 16 titrations in 400 dogs, the LD_{50} of fixed rabies virus, Tangier strain, varied between 10^{-4} and $10^{-5 \cdot 12}$. It is considered that the variations are not significant and that virulence remained in fact constant.—M.G.G.

UEKI, H., KATO, T., OISHI, J., MURAKAMI, H. & SHIMADA, K. (1957). **Observations of the time of appearance of Negri bodies, complement-fixing antigen, and virulence in mouse brains inoculated with rabies street virus.**—*Amer. J. vet. Res.* **18,** 216-218. **2988**

After intracerebral inoculation of mice, the virus was isolated within 4 to 6 days, complement-fixing antigen demonstrated in 6 to 9 days, and Negri bodies in 10 to 12 days. The rather wide variations in time were due to rabies isolates being taken from 4 dogs. Complement-fixing antigen did not appear until the intracerebral titre had reached the level of $10^{-2 \cdot 4}$ to $10^{-3 \cdot 8}$ mouse LD_{50} per 0·03 ml.—E.V.L.

SIEGEL, B. V. & LEADER, R. W. (1957). **Comparative histopathology of skin reactions in the chicken, turkey, and canary infected with a strain variant canary pox virus.**—*Amer. J. vet. Res.* **18,** 183-186. **2989**

Virus applied to scarified skin areas produced papules in chickens in 4 to 6 days; lesions rarely became confluent and usually healed in 10 to 14 days. The course of infection in 7-week-old turkeys was identical. In canaries the lesions became confluent, resulting in scab formation and were followed by death in 19 to 20 days.

The lesions in the chickens and turkeys were characterized by inflammation in the corium and subcutaneous connective tissue; in the canaries there was massive proliferation of epithelium with numerous intracytoplasmic inclusions as well as severe subcutaneous lesions. —E.V.L.

ROZOWSKI, T., MARKOWICZ, J. & RATAJ, R. (1956). Dwa ogniska zachorowań na guzki dojarzy wśród pracowników zatrudnionych przy dojeniu krów chorych na ospę krowią. **[Two foci of natural cow pox in man.]**—*Przegl. epidem.* **10,** 57-64. [In Polish, English summary.] [*Abst. from abst. in Bull. Hyg., Lond.* **31,** 1191. (1956).] **2990**

Two outbreaks of vaccinia in cows in Poland are reported, in one of which 114 cows became infected. In both outbreaks milkers developed lesions on the hands and face. It is considered that one was caused by vaccinated children handling the cows and the other through straw taken from mattresses used by recently vaccinated people.—M.G.G.

I. LIU, O. C., MALSBERGER, R. G., CARTER, J. E., DESANCTIS, A. N., WIENER, F. P. & HAMPIL, B. (1957). **Studies on the chemotherapy of viral infections. I. The activity of caprochlorone on influenza viral infection in the de-embryonated egg.**—*J. Immunol.* **78,** 214-221. **2991**

II. LIU, O. C., CARTER, J. E., MALSBERGER, R. G., DESANCTIS, A. N. & HAMPIL, B. (1957). **Studies on the chemotherapy of viral infections. II. The effect of caprochlorone on influenza virus infections in mice.**—*Ibid.* 222-227. [Authors' summaries modified.] **2992**

I. Caprochlorone is not viricidal nor does it affect the adsorption of influenza virus on susceptible cells. A true virustatic action was demonstrated. When treatment was given early in the growth cycle, maximal inhibition was produced by 2 mg. per egg. When it was given later in the growth cycle, inhibition increased as exposure to the compound was prolonged. With the maximal dose that is non-toxic for the chorio-allantoic membrane a small amount of viral reproduction can still occur. Caprochlorone was active on the intracellular phase of influenza virus in both the early and late stages of the growth cycle. More pronounced inhibition was found on haemagglutinin formation and on the infective form of the virus than on soluble antigen formation. The reversibility of the suppressive effect was shown by treatment of infected membranes for short periods.

II. The titres of influenza virus in the lungs of treated mice were on the average 10 times lower than in the lungs of controls. Treatment was less effective, however, when the infective dose was more than 10 MLD_{50}. The possibility of combined therapy using caprochlorone and antiserum was investigated. Human γ-globulin was used as the source of antiserum. A definite synergic effect was demonstrated in that mice infected with 3000 MLD_{50} were saved, whereas infections with 3 and 30 MLD_{50} were prevented by caprochlorone alone and γ-globulin alone, respectively. Mice infected 3 days previously were also cured by the combined therapy. The significance of this is discussed.

DE BOCK, C. A., BRUG, J. & WALOP, J. N. (1957). **Antiviral activity of glyoxals.**—*Nature, Lond.* **179,** 706-707. **2993**

The growth-inhibiting activity of 34 glyoxals was tested against influenza virus in 11-day-old embryonated hen's eggs: not all of these glyoxals were active. Investigation of some active compounds *in vitro* revealed a direct action on the virus. The virus particles lost their infective power when incubated with glyoxals at low concentrations. Somewhat higher concentrations destroyed the enzymic activity of the virus; the haemagglutinating power of the virus was destroyed by still higher concentrations or by prolonged incubation.—E.V.L.

SLONIM, D. (1957). Das Virus der tschechoslowakischen Zeckenencephalitis im Hühnerembryo. **[Cultivation in the chick embryo of the virus of Czechoslovakian tick encephalitis.** *Zbl. Bakt.* (*Orig.*) **168,** 1-9. [English, French and Russian summaries.] **2994**

The virus of Czechoslovakian tick encephalitis was readily adapted from intracerebral passage in mice to passage in embryonated eggs, multiplying after inoculation on the chorio-allantoic membrane, in the allantoic cavity or in the yolk sac. After 60 passages on the chorio-allantoic membrane no alteration in the anti-

genic quality of the virus could be demonstrated in mice. After 70 passages the invasiveness of the virus was lowered, as seen by the prolonged incubation period after s/c inoculation in mice. The viruses of Russian spring-summer encephalitis and louping-ill were also readily adaptable to passage in chick embryos.—M.G.G.

FINKELSTEIN, R. A. & SULKIN, S. E. (1957). **Effect of beta-propiolactone on complement-fixing antigens of St. Louis encephalitis virus.** —*Proc. Soc. exp. Biol., N.Y.* **95,** 112-115. [Abst. from authors' summary.] **2995**

Beta-propiolactone rendered the c.f. antigen of St. Louis encephalitis virus non-infective for mice. The liquid antigen was relatively stable on storage at 4°C.; it was freeze-dried without significant loss of reactivity, and it had the same degree of cross reaction with other members of the encephalitis group of viruses. Tests with paired samples of human sera indicated the possible diagnostic value of the antigen.

KARSTAD, L. H., FLETCHER, O. K., SPALATIN, J., ROBERTS, R. & HANSON, R. P. (1957). **Eastern equine encephalomyelitis virus isolated from three species of Diptera from Georgia.**—*Science* **125,** 395-396. **2996**

Eastern equine encephalomyelitis virus was isolated from pools of *Aedes mitchellae, Anopheles crucians,* and an unknown species of *Culicoides.* The isolation of Venezuelan equine encephalomyelitis virus from *Culicoides* in Ecuador is reported also.—M.G.G.

DAUBNEY, R. & MAHLAU, E. A. (1957). **Near-Eastern equine encephalomyelitis.**—*Nature, Lond.* **179,** 584-585. **2997**

In the past 6 years, in Egypt and Syria, the authors have isolated from horses, donkeys, sheep, cattle and wild birds 23 strains of virus which, in pathogenicity for lab. animals and other characters so far determined, are indistinguishable. The virus produced encephalitis in inoculated rabbits and day-old chicks and in kittens infected *per os. Hyalomma excavatum* was apparently the vector. In Syria, there have been frequent and extensive outbreaks of the disease in sheep in the past 2 years.—E.V.L.

DAUBNEY, R. (1957). **Avianised rinderpest vaccine.**—*Bull. epiz. Dis. Afr.* **5,** 50-51. [In French pp. 111-112.] **2998**

Egg-adapted, freeze-dried vaccine stored at −40°C. remained viable for more than 4 years; it immunized cattle at 1 g. × 10^{-3} dose and the fact that the virus could be recovered directly into the yolk-sac suggested no great fall in titre. In attacking power, in flexibility vis-à-vis variations in susceptibility of breeds of cattle, and in economy of production D. considers it superior to the standard Nakamura lapinized strain. Its chief disadvantage is the lack of a satisfactory method of titration.

—E.V.L.

SCOTT, G. R. (1957). **The risk associated with the importation of meat from countries where rinderpest control measures are still required.** —*Bull. epiz. Dis. Afr.* **5,** 11-13. [In French pp. 57-60.] **2999**

Countries requiring low-grade animal products do not avail themselves of the surplus of low-quality cattle in Kenya because of the possible danger of rinderpest. S. considers that since (1) natural transmission is by droplet infection and (2) every previous introduction of rinderpest into clean countries has been traced to the introduction of living animals, the risk would appear to be negligible. This risk is further lessened because of the widespread use of live attenuated vaccines; preliminary experiments demonstrated that rinderpest virus, whether virulent, caprinized or lapinized, was not recoverable from cattle one month after vaccination. But since no vaccination campaign can achieve complete cover, there will remain a small percentage of susceptible cattle which might export rinderpest virus if they were slaughtered during the incubative stage before symptoms or lesions had developed.—E.V.L.

UNDERDAHL, N. R., GRACE, O. D. & HOERLEIN, A. B. (1957). **Cultivation in tissue-culture of cytopathogenic agent from bovine mucosal disease.**—*Proc. Soc. exp. Biol., N.Y.* **94,** 795-797. [Authors' summary modified.] **3000**

Isolation and cultivation in tissue culture of a cytopathogenic agent from tissues of cattle with mucosal disease from 2 separated herds is reported. A homologous tissue culture system was used with bovine embryonic kidney cells and blood serum from new-born, antibody-free calves. The virus was inactivated by temperatures above 50°C. for 15 min., passed an 03 Selas filter and had an 11th passage titre of 10^{-5}. In sheep, the virus stimulated formation of neutralizing antibodies. A preliminary neutralization study indicated that antibodies are common in animals from herds having no previous history of mucosal disease.

SCOTT, G. C. (1957). **The use of cortisone in the treatment of infectious keratoconjunctivitis (pink-eye) in cattle.**—*J. Amer. vet. med. Ass.* **130,** 257-259. **3001**

Seven cattle affected with severe infectious

keratoconjunctivitis, with incipient or perforated corneal ulcers, recovered within 3–10 days after treatment began. Four received one or two i/m injections of 100 or 150 mg. of cortisone acetate, and local treatment twice daily with a powder consisting of sulphonamides, antibiotics and a local anaesthetic or with 0·5% suspension of cortisone acetate. Three received 50 mg. of cortisone acetate subconjunctivally, together with the antibiotic powder. In an addendum it is stated that many animals have been treated since by the subconjunctival method, and one local application of antibiotic powder, with excellent results.—M.G.G.

PLACIDI, L. (1957). La "blue-tongue" au Maroc. [**Bluetongue in Morocco.**]—*Bull. Acad. vét. Fr.* **30,** 79-84. **3002**

The first recognized outbreak of bluetongue in Morocco lasted from October to December 1956. Several flocks of sheep were affected, the proportion of sick animals rising at times to 20%, and there were a few doubtful cases in cattle. Goats were resistant; this was proved experimentally. Experimental production of the disease was difficult owing to the low susceptibility of Moroccan sheep. After an incubation period of 13–18 days there was in most cases only a transient rise in temp. of 2°. A single experimental sheep died. A polyvalent vaccine was used to vaccinate 250,000 sheep, but deaths occurred in spite of vaccination; in a flock of 2,000 head, 159 died when immunity should have been established. It is concluded that bluetongue is unlikely to become established in Morocco. Future outbreaks would be controlled by the slaughter of sick animals, isolation of flocks, and protection against mosquitoes.

—M.G.G.

WEINBREN, M. P. & MASON, P. J. (1957). **Rift Valley fever in a wild field rat (*Arvicanthis abyssinicus*): a possible natural host.**—*S. Afr. med. J.* **31,** 427-430. [Authors' summary modified.] **3003**

It was shown that this rat is able to harbour Rift Valley fever virus without itself succumbing to the infection, and that it may therefore play a role in the cyclical transmission, in which a blood-sucking arthropod is also involved. It is suggested that 2 closely related species, *A. niloticus* and *A. tenebrosus* may behave similarly in other African territories, and that as there is considerable overlap in the distribution of these species they might play a role in the dissemination of the virus.

PEHL, K.-H. & SCHULZE, W. (1957). Die Empfänglichkeit von Saugferkeln mit Kristallviolett-Vakzine immunisierter Mutterschweine für das Schweinepestvirus. [**Susceptibility to swine fever virus of piglets from sows immunized with crystal violet vaccine.**]—*Arch. exp. VetMed.* **11,** 163-170. **3004**

The authors investigated immunity in piglets born to vaccinated sows, the effect of date of vaccination, and the evidence for congenital immunity. They studied the resistance to contact infection of piglets born to sows immunized 6 or 9 months previously with crystal violet vaccine. Two litters, of 8 and 10 piglets, showed no resistance, but a third litter of 3 piglets resisted contact infection. Parenteral injection of the same strain of virus on the 38th day of life, however, produced death from swine fever. It is concluded that the small size of the litter enabled the 3 piglets to derive sufficient immune bodies from the milk. Four piglets of a sow vaccinated 4½ months before parturition resisted contact infection when their 2 litter-mates were infected fatally with a suspension of virus. Three weeks later the 4 piglets were given infected blood, as a result of which they died. The 12 piglets of a sow which had been hyperimmunized by challenge with virulent virus 3 months before parturition remained healthy when infected piglets were placed with them. The 8 piglets of a sow vaccinated immediately before mating died from swine fever when an infected piglet was placed with them.

The piglets of a vaccinated sow and an unvaccinated sow were exchanged. They were exposed to contact infection 19 days later and all died. However, the incubation period in the piglets fed by the vaccinated sow was much longer than in the other group. It is considered that the piglets failed to utilize fully the immune bodies in the vaccinated sow's milk because of diarrhoea.

It is concluded that passive immunity to swine fever in piglets is usually insignificant. Good results can be expected only when sows are vaccinated 5–6 months before parturition and the piglets are in excellent health. [See also *V.B.* **5,** p. 419.]—M.G.G.

REISINGER, R. C. (1956). **Use of rabbit-origin attenuated hog cholera vaccine for immunizing Korean swine.**—*Vet. Sci. News* **10,** No. 2. pp. 16-18. **3005**

Swine fever was estimated to have caused 5,000 deaths among a total pig population of 270,000 in 1951. Lapinized attenuated virus, used as freshly-prepared material, was injected

into 200,000 pigs in 1952 and 400,000 in 1953. Only 100 cases of the disease were reported in 1953.—R.M.

Larski, Z., Szaflarski, J. & Wcisło, B. (1957). Wyniki szczepienia terenowego przeciw chorobie cieszyńskiej świń. **[Field immunization against Teschen disease.]**—*Méd. vét., Varsovie* **13,** 199-201. [In Polish. English and Russian summaries.] **3006**

In the first field immunization against Teschen disease in Poland, 844 of 1,177 pigs were vaccinated. The formol, aluminium hydroxide precipitated vaccine was prepared according to Traub's method modified by Kodrnji. It was found to be harmless. An apparent breakdown of immunity was recorded in 2 pigs (0·35%); at the same time Teschen disease was diagnosed in 8 non-vaccinated pigs. Vaccination resulted in a distinct drop in naturally occurring cases of the disease. [See also *V.B.* **26,** 455.]—M. Gitter.

Larin, N. M. & Wooldridge, W. R. (1957). **A critical approach to canine virus distemper.**—*Brit. vet. J.* **113,** 191-202. **3007**

The present state of knowledge is reviewed. Before the disease in all its variation can be brought under control, further information must be acquired on (1) the nature of the virus and its possible plurality, (2) the variability of the virus and the role of its adaptability to environmental conditions, mutations and genetic interaction, (3) the infectivity, virulence and antigenicity of the virus, and (4) the pathogenesis of the disease and immunity response. Specific treatment may require different chemotherapeutic substances depending on whether the virus infected cells are part of the nervous, respiratory, or some other system.—A. Ackroyd.

Maral, R. (1957). Étude du développement du virus de la myxomatose en cultures de tissus. **[Development of myxoma virus in tissue cultures.]**—*Ann. Inst. Pasteur* **92,** 742-751. [English summary modified.] **3008**

Myxoma virus grew abundantly on the mononuclear cells of rabbit peritoneal exudate. Growth on rabbit kidney cells was less satisfactory, and on chick embryo was poor. Granular inclusions appeared in the cell cytoplasm; there was no other sign of cytopathogenicity, except for the development of "giant cells". C.f. tests were performed with the tissue culture fluid; the c.f. and infectivity titres did not coincide. Growth was poor when peritoneal cells from immune rabbits were used.

Sinha, S. K., Hanson, R. P. & Brandly, C. A. (1957). **Effect of environmental temperature upon facility of aerosol transmission of infection and severity of Newcastle disease among chickens.**—*J. infect. Dis.* **100,** 162-168. [Authors' summary modified.] **3009**

The severity of Newcastle disease was studied in chickens acclimatized to different environmental temperatures. The mortality rates were 100% at 85° to 90°F.; 95% at 70° to 75°F. (temperatures optimal for birds 5–6 weeks old); 75% at 50° to 55°F.; and 55% at 32° to 35°F. Susceptible groups of chickens receiving Newcastle disease virus from the infective groups by aerosol had greater mortality rate at warmer than colder environmental temperatures. The incubation period was shortest at warm temperatures. The nervous signs of the disease were predominant at the warmer temperatures and the respiratory at the colder temperatures.

Woernle, H. & Brunner, A. (1957). Zur Übertragungsmöglichkeit der atypischen Geflügelpest (Newcastle Disease) durch schutzgeimpfte und später infizierte Hühner. **[Possibility of transmission of Newcastle disease by immunized fowls subsequently infected.]**—*Mh. Tierheilk.* **9,** 116-129. **3010**

Of 24 fowls given a single injection of 2 ml. of Newcastle disease adsorbate vaccine 18 excreted virulent virus in the faeces after being infected 16–61 days later. Fowls which received 2 injections each of 1 ml. of vaccine, however, did not excrete viable virus, even after a massive infection, so long as the second vaccination followed the first after 11–25 days. The titres of fowls vaccinated for the second time rose from 1:59–1:90 to 1:69–1:170. It is recommended that dual vaccination of fowls against Newcastle disease should be enforced, the second injection to follow the first after 14–27 days.—M.G.G.

Hartwigk, H. & Nitsch, G. (1957). Zur Frage der Empfänglichkeit von Sperlingen für atypische Geflügelpest (Newcastle Disease). **[Susceptibility of sparrows to Newcastle disease.]**—*Berl. Münch. tierärztl. Wschr.* **70,** 285-288. **3011**

Newcastle disease virus was recovered from the internal organs, but not from the intestinal tract, of 26 of 30 sparrows which had been experimentally infected by the intramuscular or peroral routes. The typical symptoms of Newcastle disease were absent. Two fowls, 10 weeks old, developed acute Newcastle disease after being placed in contact with perorally infected sparrows. [See also *V.B.* **23,** 1261 & **24,** 1122.] —M.G.G.

DIMOPOULLOS, G. T. & CUNNINGHAM, C. H. (1956). **Electrophoretic and serum neutralization studies of infectious bronchitis of chickens.**—*Amer. J. vet. Res.* **17,** 755-762. **3012**

The birds were divided into 3 groups: one was a control, one received a single inoculation, and the other a 2nd inoculation after 12 weeks. Weekly examination of the blood revealed an imbalance of serum proteins which, however, was not observed when blood samples were taken at intervals of 3 weeks or more. Response to the antigenic stimulus of the first inoculation was not impaired by the imbalance of serum proteins. The total globulin and gamma globulin reached a maximum within 2 weeks and during the next 8 weeks dropped to a minimum which persisted for 10 weeks. Neutralizing antibodies reached a maximum at 6–8 weeks followed by a slight decrease during the next 12 weeks and were highest when total globulin and gamma globulin were lowest. The second inoculation caused a further increase of neutralizing antibodies in 3 weeks, followed during the next 4 weeks by a slight decrease, the terminal value being higher than the maximum induced by the first inoculation; it caused no significant change in the total globulin or gamma globulin. —T.E.G.R.

COSGROVE, A. S. (1957). **Laboratory and field studies with furazolidone in the prevention and treatment of avian infectious synovitis.**—*J. Amer. vet. med. Ass.* **130,** 286-289. **3013**

In fowls experimentally infected with avian infectious synovitis, none of the 25 which received 0·011% of furazolidone in their mash (100 g. per ton) starting 7 days before inoculation, developed the disease whereas 17 of the 25 untreated birds did. When 100, 150, or 200 g. per ton were added to the mash as soon as the first signs of the disease appeared, therapeutic effect was directly proportional to dosage, morbidity varying from 52 to 13%. In field trials in 11 infected flocks totalling 168,100 fowls and one flock of 3,500 turkeys, treatment with 100–200 g. per ton of feed resulted in a marked improvement in many of the infected birds and no new cases developed.—A. ACKROYD.

DAVIS, D. E., WATKINS, J. R. & DELAPLANE, J. P. (1957). **The treatment of turkey ornithosis in a farm flock.**—*Sthwest. Vet.* **10,** 223-226. **3014**

Psittacosis in a flock of 1900 turkeys was suppressed by the administration of 200 g. of chlortetracycline per ton of food for 3 weeks. Attempts to isolate the virus from herons and other wild birds on the farm were unsuccesful. —M.G.G.

HODES, H. L., ZEPP, H. D., HENLEY, W. L. & BERGER, R. (1957). **New method for detection of human poliomyelitis antibodies.**—*Science* **125,** 1089-1090. **3015**

The method is based on the fact that when the lower edge of a strip of filter paper is dipped in a virus suspension the virus rises and spreads on the paper and this phenomenon can be blocked if serum containing specific antibody is placed in a band across the strip.—T.E.G.R.

SEGRE, D. (1957). **A new serological test for the detection of viral antigens.**—*Fed. Proc.* **16,** 432-433. **3016**

It was found that antibody (gamma globulin of hyperimmune serum) could be adsorbed on particles of the anion exchange resin, Amberlite IRA-400, and could then be agglutinated by specific virus antigen. The test was used for the detection of virus in the serum, spleen and kidneys of pigs experimentally infected with swine fever and in the serum of naturally infected pigs. It was also used for demonstration of bovine vesicular stomatitis virus in allantoic fluid of infected chick embryos. Adsorbed antibody was also used in agglutination-inhibition tests with hyperimmune swine fever serum and vesicular stomatitis serum.—T.E.G.R.

NIŽNÁNSKY, F. & GMITTER, J. (1956). Príspevok k epizootológii a ohniskovosti koxielózy oviec. **[Epidemiology of Q fever in sheep in Slovakia.]**—*Vet. Čas.* **5,** 328-339. [In Slovak. Russian and German summaries.] **3017**

Between 1954–56 in a Q fever survey in certain districts of Slovakia, colostrum, milk, placenta and amniotic fluid from 1,114 of 15,694 sheep, 59 of 737 cattle and 18 of 64 goats yielded positive c.f. reactions. Abortions, however, except in goats in one district, were not reported. In g. pigs, inoculated with a suspension of *Dermacentor marginatus* collected in the infected districts, there was a febrile reaction and specific antibodies were demonstrated. On one occasion transmission to g. pigs by ovine colostrum and amniotic fluid was successful. Human cases were not reported during the period under review.—E.G.

MARMION, B. P. & HARVEY, M. S. (1956). **The varying epidemiology of Q fever in the south-east region of Great Britain. I. In an urban area.**—*J. Hyg., Camb.* **54,** 533-546. **3018**

MARMION, B. P. & STOKER, M. G. P. (1956). **The varying epidemiology of Q fever in the south-east region of Great Britain. II. In two rural areas.** *Ibid.* 547-561. **3019**

I. A study, using the c.f. test, of 160 patients in an urban area who had suffered from pneumonia or undiagnosed fever between 1948 and 1954 revealed that 23 had probably had Q fever. The consumption of raw milk was commoner amongst these 23 than in the other patients. *Rickettsia burneti* was isolated from the milk of 3 local dairy herds.

II. In the Romney Marsh 23 of 95 people who had suffered from pneumonia or undiagnosed fever during the period 1949–54 probably had Q fever. All of the 23 illnesses developed between March and June, roughly the period of lambing and shearing. Two sources of infection were found, sheep and the milk from 2 local dairy herds. Inoculation into g. pigs of organ material from 229 rabbits and 30 other small animals was negative. In cases where there was no history of contact with sheep or infected milk, indirect infection *via* clothing or sheep-dogs is suggested. No cases were detected in 50 patients in a rural area in East Anglia where there were very few sheep. [See also *V.B.* **24,** 3819; **26,** 858].—M.G.G.

See also abstr. **3060** (virus theory of cancer); **3063-3064** (virus-like particles in leucaemic and normal chicks and chick embryos); **3147** (report, Australia); **3149** (report, North Borneo); **3150** (report, Nyasaland); **3151** (report, Federation of Rhodesia & Nyasaland); **3158** (book, enzyme, antigen and virus).

IMMUNITY

KORNGOLD, L. & VAN LEEUWEN, G. (1957). **The effect of the antigen's molecular weight on the curvature of the precipitin line in the Ouchterlony technic.**—*J. Immunol.* **78,** 172-177. [Authors' summary slightly modified.] **3020**

Seven highly purified antigens of molecular weights ranging from 30,000 to 2,000,000 were studied by the Ouchterlony gel diffusion technique. It was found that the curvature of the precipitin line is related to the molecular weight of the antigen, *i.e.*, a straight line is obtained when the antigen has approx. the same molecular wt. as the antibody; if the line curves away from the antibody reservoir, the antigen is heavier than antibody, and *vice versa*. The theoretical and practical aspects of these findings are discussed.

LARIN, N. M. (1956). **Detection by paper electrophoresis of the protein denaturation in heat-inactivated serum for the complement fixation reaction.**—*Nature, Lond.* **178,** 1243. **3021**

Canine serum inactivated at 56°C. was procomplementary to canine complement, while the same serum became anticomplementary when inactivated at 62°C. On the basis of changes in the mobility of the proteins of these sera when examined by paper electrophoresis the author suggests that they are denatured by inactivation and that the procomplementary or anticomplementary activity may depend on the charge of the protein particle.—ALAN E. PIERCE.

CAMPBELL, B., SARWAR, M. & PETERSEN, W. E. (1957). **Diathelic immunization—a maternal-offspring relationship involving milk antibodies.**—*Science* **125,** 932-933. **3022**

Nine lactating cows were exposed to *Salmonella pullorum* through the teat by means of their calves which had received cultures of the organism in the mouth. Agglutinating antibody appeared in the milk 4–6 hours after exposure. The term "diathelic immunization" is suggested for this phenomenon and "diathelic immunity" for the state induced. It is considered that this is the reason why completely artificial feeding of calves is successful only on premises where cattle have not been reared before.—M.G.G.

EL'TSOV, S. G. & SOROKOVOI, P. F. (1953). **[Significance of hetero-haemagglutination in transfusion with blood from a different species.]**—*Trud. mosk. vet. Akad.* Ser. A. **8,** pp. 60-72. [In Russian.] **3023**

Bovine erythrocytes were not agglutinated by sera from horses or dogs, but equine erythrocytes were nearly always agglutinated *in vitro* by sera from cattle. The reaction to transfusion of blood from another species was mild if the serum of the recipient did not agglutinate the erythrocytes of the donor. The transfusion of 2 litres of whole blood, stabilized by the addition of 10 ml. 2% suramin soln. to every 90 ml. of blood, from cattle to horses had no harmful effect: it was even claimed that the transfusion had a tonic action on the horse, improving appetite and accelerating wound healing.—R.M.

PARKES, A. S. (1956). **Attenuation of host reaction to ovarian homografts.** — *Nature. Lond.* **178,** 1228. **3024**

Normal fertilization and development of oocytes derived from ovarian tissue grafts which have been previously frozen to, and stored at −79°C. have not been demonstrated. This could be shown convincingly by offspring of interstrain ovarian grafts, if these grafts did not invoke an immunological reaction.

In the experiments outlined ovaries from a hooded strain of rats were injected i/p into an albino strain. When ovarian grafts were made from the hooded strain 7 days later more of the grafts "took" in the pretreated albino rats, and many persisted longer, than in untreated controls.—ALAN E. PIERCE.

See also abstr. **2886** (anthrax); **2891-2892, 2894, 2898, 2900 & 2903** (TB.); **2906-2907** (E. rhusiopathiae infection); **2912-2913 & 2915** (pasteurellosis); **2921 & 2926-2928** (salmonellosis); **2929-2934** (brucellosis); **2949** (Cl. oedematiens toxoid); **2951** (botulism); **2959** (epizootic lymphangitis); **2962** (bovine contagious pleuropneumonia); **2964** (caprine contagious pleuro-pneumonia); **2987-2988** (rabies); **2995** (St. Louis encephalitis); **2998** (rinderpest); **3004-3005** (swine fever); **3006** (Teschen disease); **3010** (Newcastle disease); **3012** (infectious bronchitis in fowls); **3015** (poliomyelitis); **3013** (viral antigens); **3040** (allergic diagnosis of hydatid cysts); **3043, 3045 & 3048-3049** (helminths); **3157** (book, TB.); **3158** (book, enzyme, antigen and virus).

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

McCOSKER, P. J. (1957). **Systemic effect of dieldrin on the 'body louse' of poultry.**—*Nature, Lond.* **179,** 790. **3025**

Dieldrin was administered to poultry at doses between 5–25 mg./kg. body wt., orally, percutaneously and subcutaneously as a 20% wt./vol. soln., to determine its effect on *Eomenacanthus stramineus*. It had a powerful systemic action by all routes but the percutaneous was the most effective.—D. POYNTER.

GRAHAM, N. P. H. (1957). **Control of fly strike in Merino sheep. The use of dieldrin and aldrin to control crutch strike in sucking lambs and Merino weaners.**—*Aust. vet. J.* **33,** 114-118. [Author's summary modified.] **3026**

A number of field trials were carried out to assess the value of "Dieldrin" and "Aldrin" for controlling crutch strike in unweaned and newly weaned Merino ewe lambs.

For a long period after treatment, there was little fly activity, and it was not possible to assess accurately the period of complete protection given by any of the treatments. Some degree of protection was still evident 10 to 17 weeks after treatment. There was no clear evidence that increasing the concentration of Dieldrin appreciably lengthened the period of complete protection, but it did reduce the incidence of strike during the period of partial protection. In all cases where equal concentrations of Dieldrin and Aldrin were used, Dieldrin was superior, especially in reducing the incidence of fly strike during the period of partial protection. In one trial, Dieldrin at 0·025% gave results similar to Aldrin at 4 times this concentration.

—. (1957). **Warble fly infestation in cattle.** pp.79. Paris: The Organisation for European Economic Co-operation. (Project No. 205.) 6s. ($1.00) **3027**

This report is in 2 parts. The first part is a brief summary of the problem of warble fly infestation in Western Europe—the economic losses sustained, methods of control, and research in affected countries. The second part is a summary of discussions, at the International Meeting, on the economic aspects, treatment and control. Maps, showing density of warble infestation in different countries, and papers contributed by participants at the meeting are appended.—T.E.G.R.

PÉRÈS, G. (1957). La phase larvaire d' "Hypoderma lineatum" dans l'oesophage des bovidés et ses conséquences. [**The larval stage of *Hypoderma lineatum* in the bovine oesophagus and its consequences.**]—*Rev. Méd. vét.* **108,** 92-100. **3028**

In 2,160 calves, 18–30 months old, examined during 1954 for *H. lineatum* larvae in the oesophagus 483 were infected. Larvae were found in the mucous layers where they produced inflammation, and also in the musculature. During August–January, when the incidence of larvae in the oesophagus was highest, none were present on the backs of cattle and during April and May when lesions on the backs were common no oesophageal forms were found.

—D. POYNTER.

ANON. (1957). **Cattle-grub control with systemic insecticides.** pp. 8. Washington, D.C.: Agricultural Research Service, United States Department of Agriculture. [ARS-22-37.] **3029**

This gives the results of trials held between March 1955 and February 1956 to test the effectiveness of "ET-57" (*O,O*-dimethyl 0-2,4,5-trichlorophenyl phosphorothionate) against *Hypoderma bovis* and *H. lineatum* larvae in cattle. The optimum oral dosage was established as 100 mg./kg. body wt. A single dose was administered to 4 calves having a total of 75 warbles: only 14 larvae survived and only 2 of them developed into adult flies. Five more

calves were similarly treated but, 2–3 months before the time when the larvae normally appeared under the skin, only 4 warbles developed in these cattle, and all the larvae died before emerging; five untreated controls had a total of 98 warbles. Two more extensive trials involving 116 cattle revealed that treated cattle developed an average of 1·3 warbles each, compared with an average of 22–57 warbles in untreated controls. A dosage of 50 mg./kg. was relatively ineffective. When "ET-57" was applied as a spray, only larvae already under the skin were killed; oral administration had the advantage of killing larvae before they damaged the skin. Toxicity tests are not yet complete, but the dosage used appeared to be non-toxic. The fat of cattle slaughtered 3 days after treatment contained 50 p.p.m. of the unchanged drug; 14 days after treatment the amount varied from a trace to 7 p.p.m. The treatment did not appear to be suitable for lactating cows, unless their milk was discarded.

The report also contains a brief statement that the action of "Bayer 21/199", applied as a spray or given by mouth, was also being studied. Neither chemical has yet been released or approved for general use.—R.M.

BRUNDRETT, H. M., MCGREGOR, W. S. & BUSHLAND, R. C. (1957). **Systemic cattle grub control with Bayer 21/199 sprays.**—*Agric. Chemic.* **12,** 36-37 & 123 & 125. **3030**

Two proprietary parasiticides Dow ET-57 and Bayer 21/199 applied by spraying were tested for systemic effect against warble larvae. The cattle were sprayed in July and examined regularly from August to February. ET-57 failed to prevent migration of the warble larvae. Bayer 21/199 was very effective. The average number of warbles which developed on the 14 treated animals was 0·2 while on the 11 controls it was 37·2. Further tests are to be made.

ASCHER, K. R. S. (1957). **Prevention of oviposition in the housefly through tarsal contact agents.**—*Science* **125,** 938-939. **3031**

Both di-(*p*-chlorophenyl)-trifluoromethylcarbinol and di-(*p*-chlorophenyl)-pentafluoroethylcarbinol reduced or prevented oviposition in *Musca domestica* and *M. vicina* on tarsal contact, even in females resistant to these compounds. They were applied before the females were fed with milk. Dissection of the females revealed abundant motile spermatozoa and normal ovaries containing eggs.—M.G.G.

BURNETT, G. F., ROBINSON, J. & LE ROUX, J. G. (1957). **Comparative trials of D.D.T. and dieldrin for the control of the riverside tsetse** *Glossina palpalis fuscipes* **(Newst.).**—*E. Afr. agric. J.* **22,** 142-146. **3032**

Leaves were taken at intervals from bushes which had been sprayed with 5% D.D.T., 1·7% dieldrin or 5% dieldrin at the rate of 15 gal. per mile of river bank. Captured tsetse flies were each made to walk for 15 sec. on a contaminated leaf. The amount of insecticide per sq. ft. of leaf was estimated chemically. It was concluded that 5% D.D.T. is effective for only 3–5 days in the field, 1·7% dieldrin for over 3 weeks, and 5% dieldrin for about 6 weeks.

—M.G.G.

MAILLOT, L. (1956). Présence de *Glossina medicorum* Austen, 1911 au Gabon (Afrique Equatoriale Française). [*Glossina medicorum* **in French Equatorial Africa.**]—*Bull. Soc. Pat. exot.* **49,** 823-827. **3033**

M. gives a map showing the geographical distribution of *G. medicorum* in French Equatorial Africa.—D. POYNTER.

HELVEY, T. C. (1957). **Dissemination of airborne particles by explosives.**—*Bull. Wld Hlth Org.* **16,** 225-227. **3034**

Two types of simple, inexpensive missiles are described, for use when other means of applying insecticides are not available or practicable. One, consisting of a cardboard cylinder, containing insecticide and an explosive charge, and attached to a tube containing the propellent, rises to a height of about 30 yards and explodes, scattering the insecticide evenly. The second type is a small rocket which is launched from a transportable frame and will follow a horizontal or slightly inclined trajectory. Insecticide is expelled with the propellent gases for 300–500 yards.—M.G.G.

FREMMING, B. D., HARRIS, M. D., JR., YOUNG, R. J. & BENSON, R. E. (1957). **Preliminary investigation into the life cycle of the monkey lung mite** (*Pneumonyssus foxi*).—*Amer. J. vet. Res.* **18,** 427-428. **3035**

Five monkeys were delivered from their mothers by caesarian section and reared in a hospital remote from the monkey colony, which from P.M. examinations appeared to be 100% infected with *P. foxi*. Microscopic examination of the lungs one hour, 10 days, 15 days, and 31 days after delivery revealed no evidence of *P. foxi* infection. It is concluded that transmission of this parasite is not transplacental.

—M.G.G.

GRÉTILLAT, S. (1956). Deux acariens parasites de *Gallus domesticus* Lin. à Madagascar (*Bdellonyssus bursa* Berlese, 1888, et *Tyroglyphus* sp.) [*Bdellonyssus bursa* **and** *Tyroglyphus* **mites parasitizing fowls in Madagascar.**]—*Rev. Élev.* **9,** 359-365. [English and Spanish summaries.] **3036**

Bd. bursa is a common parasite of fowls in Madagscar and inflicts considerable damage. *Tyroglyphus* sp. may also infest poultry.

—D. POYNTER.

See also absts. **2994** (tick encephalitis); **2996** (Eastern encephalomyelitis virus from mosquitoes); **3017** (Q fever agent from ticks); **3147** (report, Australia); **3151** (report, Federation of Rhodesia & Nyasaland); **3152** (report, Tanganyika); **3159** (book, African Ixodoidea).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

SCHWETZ, J. (1956). Nouvelles recherches sur *Schistosoma intercalatum* Fisher. **[Studies on** *Schistosoma intercalatum***.]**—*Ann. Soc. belge Méd. trop.* **36,** 845-857. [Flemish summary.] **3037**

In the course of studies of *S. intercalatum* in man in the Belgian Congo, a goat and a sheep were successfully infected experimentally by allowing them to drink water containing cercariae from snails of the genus *Physopsis*.

It is suggested that *S. intercalatum* and *S. mattheei*, which are morphologically similar, are synonymous.—H. SCOTT MCTAGGART.

DUTT, S. C. (1957). **Development of female** *Schistosoma spindale* **in the guinea pig.**—*Nature, Lond.* **179,** 1359. **3038**

Previous reports having stated that only the male of *S. spindale* developed in the g. pig because of some host reaction on the less robust female schistosome, D. studied the effect of exposing 24 g. pigs of both sexes to cercariae of *S. spindale* discharged by naturally infected *Indoplanorbis exustus*. The investigation showed that the female schistosome may develop in the g. pig, although this animal is not a very suitable host as evidenced in the experiment by variability in susceptibility, which may in turn be explained on the basis of individual immunity of varying degree.—E.V.L.

RONZHINA, G. I. & SELIVERSTOV, P. A. (1956). **[Eradication of** *Echinococcus***,** *Coenurus* **and allied helminth infestations.]**—*Trud. saratov. zoo.-vet. Inst.* **6,** pp. 63-69. [In Russian.] **3039**

Among about 5,000 sheep on one farm, 10% were infested with *Coenurus cerebralis*, 40% with *Haemonchus* (6% of them died), 12% with *Moniezia* (8·5% of them died); *Echinococcus* cysts also occurred. To commence a campaign for the eradication of these helminths, all dogs were given anthelmintic treatment once every 50 days. Next, intradermal tests were performed on 4,908 adult sheep and 470 lambs aged 6 months, using a mixed antigen prepared from the cysts of *Echinococcus, C. tenuicollis* and *C. cerebralis*. 2·1% of the adults and 0·8% of the lambs reacted; P.M. examination of 13 reactors was positive, and the remaining reactors were sent for slaughter.

To control *Dictyocaulus*, two anthelmintic treatments, 22 days apart, were given in March–April and a single treatment was given in October. Intratracheal injections of aqueous iodine soln. were used. To control *Moniezia*, sheep were treated with 1% $CuSO_4$ soln., once in summer. To control trichostrongyles (including *Haemonchus*), treatment with phenothiazine or 1% $CuSO_4$ soln. was carried out in autumn and spring, at the beginning and end of winter housing. In addition to anthelmintic treatment, sheep were moved to fresh pasture every fifth day, and hygienic watering places were provided.

Eradication of the tapeworm larvae was not achieved within the first 3 years, although the level of infestation was much reduced. It was claimed that *Dictyocaulus* was eradicated in the first year of the campaign, and *Moniezia* after 3 years, while trichostrongyle infestation had been reduced from 100% to 10%. Wool production increased from 1·1–1·6 kg. a sheep before the campaign to 2·3–2·5 kg. afterwards. 103–106 lambs were reared from every 100 ewes, compared with 80–84 lambs before the campaign started.—R.M.

SELIVERSTOV, P. A. (1956). **[Allergic diagnosis of hydatid cysts in sheep.]**—*Trud. saratov. zoo.-vet. Inst.* **6,** pp. 85-89. [In Russian.] **3040**

Out of 6 antigens tested, the best was an emulsion of scolices and cyst wall in 1% saline plus 1 : 10 of 0·5% phenol soln. It was injected i/d into the upper eyelid in doses of 0·1–0·2 ml. A positive reaction became visible within 20–30 min. and the swelling was greatest an hour after injection; it persisted for 4–5 hours. An increase in skin thickness to more than 1·5 cm. (normal thickness 0·8 cm.) was considered to be a positive reaction. Forty sheep were tested: 3 gave a

severe reaction (increase in skin thickness to over 3·8 cm.) and 10–22 cysts were found in each of them; 22 also gave a positive reaction and 1–3 cysts were found in each; 24 were negative, and only one cyst was found in one of them.—R.M.

CLORE, E. E. & WILLE, T., JR. (1957). **Observations on the use of sodium silicofluoride in feed for the removal of whipworms from swine.**—*J. Amer. vet. med. Ass.* **130,** 495-496. **3041**

Six unthrifty pigs were given a single dose of sodium silicofluoride as 1% of the food. Two days later one was killed. Several hundred whipworms, many of them apparently lifeless, were found in the caecum and colon. A second pig, killed 14 days later, harboured only a few dead whipworms. Palatability studies indicated a mixture consisting of 79% food, 1% sodium silicofluoride, and 20% brown sugar. Preliminary starvation for 24 hours was necessary. Sodium silicofluoride has since been used with excellent results in herds of pigs where sodium fluoride had had no effect. The dosage recommended is 1 lb. of food mixture per 25 lb. body wt. for pigs weighing up to 50 lb., thereafter 1 lb. for every additional 50 lb. of body wt. up to a maximum of 5 lb. of mixture.—M.G.G.

HILL, C. H. (1957). **The survival of swine whipworm eggs in hog lots.**—*J. Parasit.* **43,** 104. **3042**

Eggs of *Trichuris suis* remained infective for 18 months in water at room temp. In the soil of an old pigsty they remained infective to susceptible pigs for 6 years.—D. POYNTER.

PRICE, S. G. & WEINER, L. M. (1956). **Use of haemagglutination in the diagnosis of trichinosis.**—*Amer. J. clin. Path.* **26,** 1261-1269. [Interlingua summary.] **3043**

The haemagglutination reaction is a useful laboratory aid in the diagnosis of trichinosis. The method is more sensitive and reliable than precipitin and complement-fixation tests.

—D. POYNTER.

GOULD, S. E., GOMBERG, H. J., VILLELLA, J. B. & HERTZ, C. S. (1957). **Studies on *Trichinella spiralis*. VI. Effects of cobalt-60 and X-ray on morphology and reproduction.**—*Amer. J. Path.* **33,** 79-105. **3044**

Excysted trichinella larvae, after exposure to various doses of cobalt-60 or of X-ray, were fed to white rats. The radiation reduced the reproductivity of the worms, even causing complete sexual sterilization depending on the dose. Morphological changes included stunting of growth and degenerative changes in the gonads. In each instance where the effects were compared, the dosage of cobalt-60 necessary to produce a given effect was about 3 times the dose of X-ray.—H. SCOTT MCTAGGART.

SADUN, E. H., NORMAN, L. & BROOKE, M. M. (1957). **The production of antibodies in rabbits infected with irradiated *Trichinella spiralis* larvae.**—*Amer. J. trop. Med. Hyg.* **6,** 271-279. [Authors' summary modified.] **3045**

Rabbits that received single doses by mouth of irradiated larvae of *T. spiralis* failed to produce antibodies in sufficient amounts to be detected by the flocculation and c.f. tests. After multiple feedings with irradiated larvae they produced antibodies at low titres and of brief duration. After extra-intestinal inoculations they produced antibodies in relatively high titres. A re-evaluation of the significance of positive serological tests in trichinosis might become necessary if the recommendation of commercially irradiating pork as a means of protecting human beings from trichinosis should be widely adopted.

WHITLOCK, J. H. (1956). **Trichostrongylidosis in sheep and cattle.**—*Proc. 92nd Ann. Meet. Amer. vet. med. Ass.* 1955. 123-131. **3046**

A review.—H. SCOTT MCTAGGART.

PETERSON, J. E. (1957). **Observations on parasitic gastro-enteritis of cattle in Western Australia.**—*Aust. vet. J.* **33,** 108-113. [Author's summary modified.] **3047**

Observations were recorded on the species of nematodes found in the gastro-intestinal tract of young dairy cattle in the Busselton district and on the epidemiology of the parasitism. *Cooperia oncophora* and *Ostertagia ostertagi* were the most common causes of outbreaks of parasitic gastro-enteritis. Light infestations with 7 other nematodes were also recorded. *Oesophagostomum venulosum* is recorded as a parasite of cattle, for the first time in Australia.

I. DAVTYAN, E. A. & SHUL'TS, R. S. (1955). [**Active immunization of sheep against *Cystocaulus nigrescens.***]—*Trud. armyan. nauchno-issled. vet. Inst.* **8,** pp. 93-116. [In Russian.] **3048**

II. DAVTYAN, E. A. (1955). [**Active immunization of sheep against *Dictyocaulus.***]—*Ibid.* pp. 117-129. [In Russian.] **3049**

I. Preliminary tests with several antigens were tried on groups of 8–29 sheep aged 6–7 months. They were challenged 14 days after

the final inoculation of antigen by the administration of 1,000—1,200 infective larvae. Immunity was never absolute, but the best results (protection of 3 out of 6 sheep) were obtained by six intratracheal inj. of a saline extract of *C. nigrescens* lung lesions. Addition of saponin improved the efficacy of antigens. Extracts or suspensions of dead larvae were ineffective, but promising results were obtained by the i/v or i/m administration of 5,000—12,000 live larvae. It was recommended that field trials be performed using the i/m route, combined with inoculations of suspensions of killed larvae. Natural immunity to *C. nigrescens* was observed in some of the controls.

II. Antigen was prepared from saline extracts of mesenteric lymph nodes of calves killed 3–4 days after infection with 10,000—15,000 *D. filaria* larvae. Absolute immunity was established in 67 lambs aged 4–5 months, after they had been given 3 i/m injections of 10, 15 and 25 ml. of antigen, at intervals of 8–9 days. Each dose contained 3 mg. saponin: only transient immunity was obtained by antigen without saponin. Immunity was tested by the administration of 300–500 larvae 14–16 days after the last inj., and was assessed by faecal examinations and by P.M. examination after 45–54 days. Saline extract of adult worms plus saponin, administered i/m in the same way as the lymph node antigen, was also stated to provide absolute immunity. This extract was prepared by adding saline to washed worms in the proportion 1 : 10, stored at 2° to 3°C. for 6–7 days before being ground up. 0·3% formol was added and the mixture kept at 37°C. for 24 hours.

The administration of about 100,000 live larvae by i/m inj. provided a stable immunity, but this method was not recommended. Active immunization was most effective under the best conditions of feeding and in the absence of other disease.—R.M.

WERTEJUK, M. & CHOWANIEC, W. (1957). **Adipinian piperazyny—nowy środek przeciwrobaczy u lisów hodowlanych. [Piperazine adipate for foxes.]**—*Méd. vét., Varsovie* **13**, 201-203. [In Polish. English and Russian summaries.] **3050**

The authors treated successfully 382 foxes including 16 pups, 4–8 weeks old. They found piperazine adipate safe and easy to administer. After a single dose, preferably in the morning, mixed with food at the rate of 0·1 g. per kg. body wt., live worms and worm eggs were evacuated with the faeces in 12–36 hours. The drug proved to be highly efficient against *Toxocara canis* and *Toxascaris leonina*. Heavily infested animals can be safely treated on 3 successive days.—M. GITTER.

SOULSBY, E. J. L. (1957). **Immunization against *Ascaris lumbricoides* in the guinea pig.**—*Nature, Lond.* **179**, 783-784. **3051**

S. immunized g. pigs by two s/c inj. each of 50,000 infective ova given at an interval of 20 days. Another group was immunized by oral dosage with 20,000 infective ova at the same time interval. After 20 days these groups and a control group were challenged with 100,000 infective ova given *per os*. Immunization depressed the marked migration to the lungs seen in the control group between the third and sixth day. Little growth occurred in the larvae in the immunized groups; many of the larvae had degenerated and were covered with precipitates and cellular masses.

Experiments with non-viable "vaccines" indicated that saline extracts of disintegrated infective ova and saline solutions of larval excretions and secretions were the most potent preparations for stimulating protective immunity. —D. POYNTER.

WILLIAMS, F. P., JR. & HABERMANN, R. T (1957). **An evaluation of the efficacy of stylomycin, phenothiazine, cadmium anthranilate, and the piperazine compounds for the removal of oxyurids in mice.**—*Amer. J. vet. Res.* **18**, 429-431 **3052**

Stylomycin, given to mice in a dose of 3 mg. each in 10 g. of food, was non-toxic and removed 98% of *Aspicularis tetraptera* and *Syphacia obvelata*, but did not appear effective against *Hymenolepis*. Phenothiazine (500 mg. in 10 g. of food) removed 70% of oxyurids, cadmium anthranilate (25 or 30 mg.) removed 55%, piperazine adipate (10 mg.) removed 50%, the aminonucleoside of stylomycin (1 or 3 mg.) removed 45%, parvex (10 or 20 mg.) removed 44%, and "Pipcide" (an equimolecular complex of piperazine citrate and piperazine tartrate), in a dose of 5 or 10 mg., removed only 12 %. Control mice eliminated 13% spontaneously. —M.G.G.

SHOHO, C. (1956). **Cerebro-spinal nematodiasis (setariasis) in abnormal or inadequate hosts.** —*Ceylon vet. J.* **4**, 75-77. **3053**

A general account of cerebrospinal nematodiasis, with some support for the suggestion that "inadequate host" may be a better description of affected animals than "abnormal host." Reference is made to cases where immature

Setaria digitata were recovered from the c.n.s. of cattle, the normal host of this parasite, and the dispute concerning the classification of the *Setaria* species is briefly reviewed.

—W. E. Parish.

Barke, A. & Gierschik, H. (1957). Piperazin als Wurmmittel für Tiere. [**Piperazine as an anthelmintic for animals.**]—*Dtsch. tierärztl. Wschr.* **64,** 177-180. **3054**

Mice injected i/p with 10% piperazine citrate at a dosage of 2 g./kg. body wt. showed no symptoms of toxicity; but 4 g./kg. caused death in 10 min.

Cats showed no toxic effects, apart from one case of vomiting, with dosage rates of 440 and 530 mg. piperazine citrate per kg. given by stomach tube and 675 mg. piperazine adipate per kg., fed in meat. 1,000–1,200 mg. piperazine adipate per kg. given *per os*, was non-toxic to dogs apart from one case of vomiting, but 1,500 mg./kg. caused drowsiness, inappetence, weakness of the hind quarters and staggering. 1,040 mg./kg. daily for 3 days caused a slight temporary decrease in the r.b.c. and an oesinophilia. 5 or 10 mg. adipate or citrate administered i/v to an anaesthetized dog caused a sudden marked fall in blood pressure with return to normal in about 90 sec.

In cockerels single oral doses of 423 and 1,013 mg. of the adipate per kg. and total doses of 3,688 and 3,946 mg./kg. administered over a period of 3 days were non-toxic.

—H. Scott McTaggart.

Oelkers, H.-A. (1957). Zum Mechanismus der anthelmintischen Wirkung des Piperazins. [**Mechanisms of the anthelmintic action of piperazine.**] — *Arzneimittelforsch.* **7,** 329-330. **3055**

While in *Ascaris lumbricoides* a relatively low concentration of piperazine hydrate caused reversible paralysis *in vitro, Fasciola hepatica,* earthworms and leeches withstood considerably higher concentrations without visible damage. In nerve–muscle preparations of the earthworm and leech and in muscle preparations stimulated by thymol or santonin, reversible paralysis was caused by relatively low concentrations of piperazine.—R.M.

Goldsby, A. I. & Todd, A. C. (1957). **A new swine anthelmintic.**—*N. Amer. Vet.* **38,** 140-144. **3056**

"Hygromycin," an antibiotic, was fed to four pigs at the rate of 2 g./100 lb. of feed for 54–72 days. The numbers of eggs of *Metastrongylus* sp., *Trichuris suis* and *Strongyloides ransomi* in the faeces fell during this period and remained low upon withdrawal of the drug. The number of eggs of *Oesophagostomum* sp. fell but increased to pre-dosing levels on withdrawal. The number of *Ascaris* eggs decreased slowly. At P.M. examination the total yield of helminths from all four pigs was, 4 *Metastrongylus* sp., 1 *S. ransomi*, 12 *A. lumbricoides*, 28 *T. suis* and 276 *Oesophagostomum* sp.—D. Poynter.

Luisenko, A. A. (1956). [**New method of administering phenothiazine for large-scale anthelmintic treatment of animals.**]—*Trud. novocherkassk. zoo.-vet. Inst.* **9,** pp. 159-167. [In Russian.] **3057**

For the dosing of large numbers of sheep when short-handed, L. recommended the use of enemas containing 2·5–3·5% phenothiazine suspended in a 1:25 mixture of flour and water. A dosage of 1g./kg. body wt. of phenothiazine administered by this route twice in a month was stated to be non-toxic and effective against *Haemonchus contortus*. Copper sulphate could be added to the enema to provide simultaneous control of *Monzieia* spp. Apparatus required was a funnel connected to a rubber tube.—R.M.

Hurter, L. R. (1956). **Subcutaneous carbon tetrachloride in helminthiasis of ruminants and pigs.**—*J. S. Afr. vet. med. Ass.* **27,** 255-257. **3058**

P.M. observations on a number of animals out of several hundred sheep, cattle and pigs infected with various species of nematodes (but not with liver flukes) treated in the field revealed heavy residual infestations. H. concluded that the method is of doubtful value in treatment of nematode infections. The author has not tested it against liver fluke disease. [See also Boray (*V.B.* **27,** 1811)].—H. Scott McTaggart.

See also absts. **3147** (report, Australia); **3148** (report, New Zealand); **3150** (report, Nyasaland); **3154** (report, Republic of Ireland).

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

Grant, C. A. (1957). **Carcinoma of the canine prostate. A review with a pathological study of two new cases.**—*Acta path. microbiol. scand.* **40,** 197-208. [In English.] **3059**

The few cases of canine prostatic carcinoma recorded in the literature are reviewed, and 2

further cases, from the Royal Veterinary College, Stockholm, are described in detail. Both affected dogs (a 12½-year-old Pointer, and a 10-year-old Rottweiler) showed rather diffuse carcinomatous changes in the prostate, together with metastases in the internal iliac nodes, lungs, heart, kidney and adrenal. In the second dog, which had shown clinical signs of c.n.s. involvement, metastases were also present in the brain.

There is no clear evidence so far that sex hormones play a significant part in the causation of prostatic cancer in dogs. Latent carcinoma, as seen in man, has not yet been described in the dogs.—E. COTCHIN.

FISCHER, W. O. (1956). **A contribution to the virus theory of cancer.**—*S. Afr. med. J.* **30,** 1058-1061. **3060**

F. reported previously [*S. Afr. med. J.* (1950). **24,** 869] that intracytoplasmic inclusion bodies were present in the anterior lobe of the hypophysis in 17 African miners who died from primary carcinoma of the liver, and not in men dying from other diseases. These inclusion bodies were present in the adrenal glands of g. pigs that had been inoculated with emulsion of these hypophyses. These bodies have now been studied in g. pigs inoculated with hypophysis emulsion from a further African miner dead from liver cancer. Similar bodies were seen in the adrenals of g. pigs into which unspecified material was inoculated from a dog which died from carcinoma of the liver, with multiple metastases. Both human and canine "strains" have been transmitted from g. pig to g. pig. The bodies are confined to the zona reticularis of the adrenal cortex. In some inoculated g. pigs, carcinoma of the liver was found.

Sera from human patients with carcinoma of various organs were inoculated into g. pigs simultaneously with emulsions of adrenals containing "human strain" or "canine strain" inclusion bodies. In 15 out of 24 completed experiments with human strains, and in 3 out of 3 with canine strains, inclusion bodies did not appear in the adrenals, although they did in control groups inoculated with inclusion-body material alone. Research is continuing.

—E. COTCHIN.

SCHULZ, L. C. (1957). Vergleichende Betrachtungen zur Bedeutung des Traumas in der Geschwulstaetiologie, insbesondere bei der Entstehung osteogener Sarkome. **[Significance of trauma in the aetiology of tumours, especially osteogenic sarcoma.]** — *Dtsch. tierärztl. Wschr.* **64,** 134-138. **3061**

In some cases of bone sarcoma formation in the dog, a history of previous trauma is given. S. refers to cases of primary or secondary tumours of bone, found P.M. in 378 dogs: in 10 cases of osteosarcoma, 3 (out of 8) of the tumours of limb bones were in dogs with a history of trauma, as was one of the rib. Of 7 cases of paraosteal sarcoma, none had a history of trauma. (Details of these cases are to be given elsewhere.)

S. discusses the resemblances and differences between man and dog as regards the site of origin of bone sarcomas. The distribution of sarcomas in the limb bones of dogs—in relation to that metaphysis in which (with the exception of the tibia) the later-closing epiphysis occurs—is in accord with trauma being of aetiological significance, not only as a single traumatic injury, but secondarily, and chiefly, as a series of physical and other factors disturbing the normal processes of repair. The greater relative incidence of bone sarcoma in dogs than in man may result from the fact that the dog's limb will in general not be protected from such "syncarcinogenic" post-traumatic insults. That bone tumours affect the metaphysis, rather than the diaphysis, may be correlated with the greater local growth activity there, along with the greater effect of locally-attached muscles and ligaments. Similarly, the greater incidence of bone sarcomas in the anterior limbs of the dog, and in the hind limbs of man, would be in accord with such "traumatic" origin.—E. COTCHIN.

ANON. (1957). **Human tumour transplants in animals.**—*Brit. med. J.* April 20th, 940. **3062**

It was known, through the work of Toolan, that human cancers could be transplanted under the skin of cortisone-treated rats, and were thus available for therapeutic trials. The criticism was made that a human tumour thus transplanted had lost its human character, a criticism that would be refuted if one such tumour, after animal passage, could again be grown in its original human host. Such an experiment was made possible through the interest and courage shown by a woman with an inoperable carcinoma of the cervix: a portion of the cervical tumour was transplanted in rats, and then re-implanted under the skin of the patient's arm. That the implant had taken was shown when it was again excised.—E. COTCHIN.

I. BENEDETTI, E. L., BERNHARD, W. & OBERLING, C. (1956). Présence de corpuscules d'aspect virusal dans des cellules spléniques et médullaires de poussins leucémiques et normaux. **[Presence of virus-like particles in**

cells of spleen and bone marrow in normal and leucaemic chicks.]—*C. R. Acad. Sci., Paris* **242**, 2891-2894. **3063**

II. Benedetti, E. L. & Bernard, W. (1957). Présence de particules d'aspect virusal dans la rate d'embryons de poulets normaux. [**Presence of virus-like particles in the spleen of normal chick embryos.**]—*Ibid.* **244**, 2204-2206. **3064**

I. Examination by electron microscope of ultra-thin sections of spleen and bone marrow from normal chicks and chicks infected with avian leucosis virus, aged 3–21 days, revealed the presence in some of the specimens of spherical particles 75–80 mμ diam., each containing a central "nucleus" 30–40 mμ diam.

II. Further electron microscope studies confirmed the authors' previous observations. The particles were similar to those occurring in Rous sarcoma, erythroblastosis, myelomatosis and the Murray-Begg tumour. The authors suggested that they represented a virus in the course of transmission through the egg, possibly the virus of avian lymphomatosis.—R.M.

See also absts. **3148** (report, New Zealand); **3152** (report, Tanganyika).

NUTRITIONAL AND METABOLIC DISORDERS

Robertson, G. L. (1956). **Plane of nutrition as it affects reproduction performance in livestock.**]—*Sthwest. Vet.* **10**, 54-58. **3065**

Reports from numerous observers indicate that, whilst a high level of nutrition in livestock promotes the early attainment of puberty except possibly in pigs and also favours the production of a greater number of ova, the fertility of which is not detrimentally affected, it does seem to reduce the chances of an embryo's survival to full term. Severe restriction of feed intake is equally detrimental.—A. Ackroyd.

Wiener, G. & Purser, A. F. (1957). **The influence of four levels of feeding on the position and eruption of incisor teeth in sheep.**—*J. agri. Sci.* **49**, 51-55. [Authors' summary slightly modified.] **3066**

The distance between the front of the incisor teeth and the front of the maxillary pad (incisor bite measure) was measured in 140 sheep about a year old. The sheep were of 7 breed types—the offspring of Blackface ewes by Wiltshire, Border Leicester, Lincoln and Blackface rams, and of Welsh ewes by Welsh, Wiltshire and Suffolk rams. Within each breed type the effects of 4 different feeding treatments lasting 7 months were studied. These produced small but very significant differences in bite measure. Differences between breed types were significant only in respect of the division between the two breeds of dam. Effect of breed of dam, however, was confounded with any effect due to differences in origin. The proportion of permanent central incisors which had replaced milk teeth when the animals were a little more than a year old was affected both by the level of nutrition and by breed.

Robinson, W. O. & Dever, R. F. (1956). **Composition of soils, peats, and plants associated with cattle malnutrition.**—*Soil Sci.* **82**, 275-285. **3067**

Samples of soil and vegetation were collected from areas in Utah where symptoms of molybdenosis had been reported in cattle. The parent rock is basic volcanic lava. Most of the specimens of peat were alkaline or almost neutral; one contained 28 p.p.m. of molybdenum and 10·3 of selenium. Some of the samples of vegetation were high in molybdenum, and one sample of clover contained 30 p.p.m.; but most of the samples of grass contained not more than 3 p.p.m. They were, however, low in copper, phosphorus and cobalt.—M.G.G.

Koval'skii, V. V., Paducheva, A. L. & Shraer, B. S. (1957). [**Seasonal variations in water metabolism of Karakul sheep.**]—*Proc. Lenin Acad. agric. Sci.* **22**, No. 1. pp. 31-37. [In Russian.] **3068**

Water metabolism was studied in Karakul sheep in the Kherson oblast under conditions of daily watering (450 sheep) or watering once in 3 days (300 sheep), during 12 months. The results were given in tables showing average intake and excretion at different times of the year. The maximum daily intake of sheep weighing 45–55 kg. was 7–7½ litres; this was after 2 days' deprivation of water in August. Similar sheep watered daily drank an average of 5 litres a day.—R.M.

Vera y Vaga, A. (1956). Comparacion de dos métodos de estimación de la producción lechera en la oveja durante el periodo de amamantamiento del cordero. [**Comparison of two methods of estimating milk production in the ewe during the suckling of the lamb.**]—*Arch. Zootec., Cordoba.* **5**, 322- 348. **3069**

The author preferred the method of collection of milk from the ewe after slaughtering the

lamb, to the method of weighing the lamb before and after feeds. Coefficients for correction of the values obtained were given.—R.M.

CLAYTON, C. G. (1957). **Radioactive contamination of foodstuffs from fall-out as a source of error in some animal experiments.**—*Nature, Lond.* **179,** 829-830. **3070**

Residual radioactivity was observed in the excreta of control rats which had not been given a radioisotope in their food. This radioactivity, which was first noticed in July 1956, has recently increased. The activity of rat cubes and articles of human diet was measured. Fresh cabbage gave the highest readings, one sample giving 131·5 counts per min. Foods not recently prepared—sugar and semolina—gave the lowest readings—2·1 or 2·2 c.p.m. It is considered that caesium-137 is the active ingredient, the content being about 4 $\mu\mu$c. per g. of cabbage. —M.G.G.

SCHMIDT-NIELSEN, B., SCHMIDT-NEILSEN, K., HOUPT, T. R. & JARNUM, S. A. (1957). **Urea excretion in the camel.**—*Amer. J. Physiol.* **188,** 477-484. [Authors' abst. modified.] **3071**

When growing camels (*Camelus dromedarius*) were maintained on a low N intake (dates and hay) the amount of N excreted in the form of urea, NH_3 and creatinine decreased to 2–3 g./day. This decrease was caused by a drop in urea excretion from 13 g. to 0·2–0·5 g./day. Urea given i/v during low N intake was retained. The renal mechanism for urea excretion was investigated by measuring urea clearance and glomerular filtration rate during a period of 7 months. It was concluded that the renal tubules must either vary their permeability to urea in a highly selective manner or excrete urea actively.

HANSARD, S. L., CROWDER, H. M. & LYKE, W. A. (1957). **The biological availability of calcium in feeds for cattle.**—*J. Anim. Sci.* **16,** 437-443. [Authors' summary modified.] **3072**

Radioisotope procedures were employed for the measurement of endogenous calcium in cattle and for calculation of net absorption. In 109 individual balance studies with young and mature steers, pair-fed a basal ration to which calcium was supplied from 15 organic and inorganic sources, true digestibility was greater in young than mature steers, and this age difference was greater than that due to calcium source. Calcium from inorganic sources appeared to be utilized slightly more efficiently than that from lucerne, lespedeza or orchard grass hay, but these differences were not statistically significant.

ANDREWS, E. D., GALL, L. S., HART, L. I. & ANDERSON, J. P. (1957). **Effects of orally-administered penicillin on cobalt-deficient and cobalt-dosed lambs.**—*N. Z. J. Sci. Tech.* Sect. A. **38,** 654-663. [Authors' summary slightly modified.] **3073**

Cobalt-deficient lambs showed response to 50,000 units of crystalline sodium penicillin G given orally thrice weekly for 9 weeks and thereafter daily for 10 weeks, but the response was slight as compared with that obtained from oral doses of cobalt sulphate at the rate of 7 mg. cobalt a lamb a week. Lambs given cobalt plus penicillin showed a significantly greater growth response than those given cobalt alone. Penicillin did not apear to increase the synthesis of vitamin B_{12} in the rumens in either cobalt-deficient animals or cobalt-dosed lambs. The rumen flora of cobalt-deficient animals differed from the normal. The presence of long segmented rods was peculiar to cobalt-deficient lambs not receiving penicillin. In both cobalt-deficient and cobalt-dosed lambs penicillin modified rumen function. In particular the ability of rumen organisms to digest fibre was reduced. Although 50,000 units of penicillin given daily, increased growth rate, results showed that in general the amount of single oral doses liable to affect adversely the health and growth of lambs may not greatly exceed this figure, and is probably appreciably less than 150,000 units.

GROSHEV, M. K. (1956). **[Radiological diagnosis of mineral deficiency in sheep.]**—*Trud. saratov. zoo.-vet. Inst.* **6,** pp. 152-159. [In Russian.] **3074**

The method was based on the premise that bone density was directly related to the calcium–phosphorus content. Density was measured as follows: a radiograph of a given bone was placed over an aperture of a box containing a source of light. Light passing through the radiograph was picked up by a photoelectric cell connected to a mirror galvanometer. The extent of deflection of the galvanometer was measured, and the figure obtained was used as a measure of density. A standard method of taking the radiographs was stipulated for various bones of the sheep. Thus for the metacarpus of adult sheep, 50–60 kv and 30–40 milliamps (passing through a 1·5 mm. aluminium filter) were used at a distance of 60 cm. and for an exposure of 0·4–0·5 sec. For lambs up to 10 months old, the distance was increased to 80–100 cm.

Normal density of the metacarpus was 2·7 in day-old lambs, rising to 6·1 at 37 days of age. In lambs born to underfed ewes, the

density was only 0·95 at the first day of life; the difference in underfed lambs was even more pronounced in the tibia and the body of the fibular tarsal bone (density 4·7 times less than normal in each case). Figures for the normal density of several other bones were also given. —R.M.

HOFFMANN, J. A. (1957). Über die Zungendarre der jungen Gänse und Enten. [**Glossitis in young geese and ducks.**]—*Berl. Münch. tierärztl. Wschr.* **70,** 47-49. [English summary.] **3075**

Since the author's previous publication on glossitis in goslings [*V.B.* **26,** 1711], the condition has also been observed in young ducks, and has been reported from several parts of Germany. The condition could be prevented by the provision of green food and a mineral supplement. It was confirmed that surgical treatment (lancing the affected tongue) gave good results.—W. G. SILLER.

COLE, C. R., CHAMBERLAIN, D. M., HIBBS, J. W., POUNDEN, W. D. & SMITH, C. R. (1957). **Vitamin D (viosterol) poisoning in a cow, from a study of the prevention of parturient paresis.**—*J. Amer. vet. med. Ass.* **130,** 298-299. **3076**

In a Jersey cow given daily 30 million units of vitamin D orally for 20 days before and one day after calving to study its toxic effects, anorexia, reduced rumination, depression, weight loss, and electrocardiographic changes developed within 11 days; at P.M. examination on the 14th day after calving, extensive calcification of tissues in the heart, large vessels and kidneys was found.—A. ACKROYD.

BROWN, W. O. (1957). **The transfer of maternal dietary riboflavin to the embryo during development in the common fowl.**—*J. agric. Sci.* **49,** 88-94. [Author's summary modified.] **3077**

Confirmatory evidence of the direct effect of egg content of riboflavin on subsequent growth of the chick is given by liver analyses for riboflavin. Changes in the liver content after hatching showed that after 10 days on a diet poor in riboflavin the reserves of chicks reach a minimal level irrespective of original egg content. There was a direct relationship between the amount reaching the embryo and the initial content of the egg. Evidence is presented of a high rate of transfer at the most critical period of development, which is at 14–15 days as judged by embryonic mortality in riboflavin deficiency. In eggs with a low content of the vitamin a relatively small amount reaches the embryo at this critical stage. Hens on a diet poor in riboflavin required about 3 weeks to attain a maximal content of the vitamin in their eggs. Riboflavin injected into the egg was as fully utilized by the embryo as that deposited at egg formation. Qualitative chromatographic separation of the flavines of fertile eggs during incubation revealed a gradual increase in combined forms.

BUSTAD, L. K., GEORGE, L. A., JR., MARKS, S., WARNER, D. E., BARNES, C. M., HERDE, K. E. & KORNBERG, H. A. (1957). **Biological effects of I^{131} continuously administered to sheep.**—*Radiation Res.* **6,** 380-413. [Authors' summary modified.] **3078**

Diminished thyroid avidity for I^{131} as determined by external monitoring was evident in all ewes fed 5 μc or more daily and occurred before the clinical changes. With the exception of damage to structures contiguous to the thyroid, ulceration of the mouth, and lymphopenia, the effects resembled those of thyroidectomy. Clinical manifestations in ewes fed 240 or 1800 μc daily included lethargy, clumsy motion, constipation, bloating, diminished milk secretion, and dry skin and fleece. A fall in leucocyte count and protein-bound iodine and an increase in nonprotein nitrogen and creatinine concentrations were observed. In addition, the first-year offspring of the ewes fed 240 μc exhibited a fall in haemoglobin and serum calcium and a rise in serum inorganic phosphorus concentrations; growth was retarded markedly and there was variable alopecia. Although conception occurred during the second breeding season in ewes fed 1800 and 240 μc, they failed to give birth to viable offspring. Animals fed 135 μc daily had clinical and pathological changes similar to those receiving 240 μc but they were less severe. The effects were proportionally milder in the groups fed 45, 30 and 15 μc daily. Examination of the thyroid gland in animals fed 240 and 1800 μc daily revealed chronic inflammation, necrosis and fibrosis with eventual replacement of the gland by scar tissue. Seven of the 9 adults fed 5 μc daily for 3–4 years had slight to moderate interfollicular fibrosis and a significant reduction in size of the gland. No damage was observed in animals fed 0·15 μc daily with a thyroid dose of about 3 rads weekly. A daily intake of 0·15 μc could result from an average contamination level of 5×10^{-5} μc of I^{131} per g. of vegetation eaten by adult sheep. This suggests a value of 10^{-5} μc per g. of vegetation as the max. permissible conc. for grazing land. The study is continuing with doses of 0·15, 0·5, and 1·5 μc daily, to determine within a factor

of 3 the quantity of I^{131} that may be ingested daily without damage to sheep during their normal life span.

CORNELIUS, C. E., SMALL, M. & KLEIBER, M. (1957). **^{14}C studies on ketogenicity of metabolites in lactating dairy cows.**—*Proc. Soc. exp. Biol., N.Y.* **95,** 172-174. [Authors' summary slightly modified.] **3079**

The relative transfer of carbon-14 from propionate-2 ^{14}C, carbonate-^{14}C, glucose-1-^{14}C, glycine-1-^{14}C, butyrate-2-^{14}C, and norvaline-3-^{14}C into the 2, 3, 4 carbon atoms of urinary B-hydroxybutyric and acetoacetic acid, and acetone was studied. Carbon-14 atoms of norvaline-3-^{14}C and butyrate-2-^{14}C were more ketogenic than those in the other compounds.

ADLER, J. H. & DYE, J. A. (1957). **The problem of establishing the dosage of glucocorticoids for the treatment of diseased cows with ketosis.**—*J. Amer. vet. med. Ass.* **130,** 293-295. **3080**

Consideration of the mechanism of ketogenesis leads to the conclusion that the ketonaemic-hypoglycaemic complex is a non-specific result of a variety of conditions or sum of conditions that present the liver with a metabolic mixture that favours ketogenesis. The rationale of using glucocorticoids in the treatment of dairy cows exhibiting ketosis is based on the glucogenic activity of these agents, but they also produce a temporary feeling of well-being and stimulate the appetite. If the factor precipitating ketosis is also temporary or is specifically treated, small doses of glucocorticoids will be useful, but if the precipitating factor persists, the animal will continue to relapse after successive glucocorticoid therapy.—A. ACKROYD.

See also abst. **3147** (report, Australia).

DISEASES, GENERAL

SCHLEITER, H. & DIETZ, O. (1957). Zur Anwendung von Novocain und Hydrocortison bei akuten und chronischen aseptischen Gelenk- und Sehnenscheidenentzündungen. **[Use of procaine and hydrocortisone in acute and chronic aseptic arthritis and tendovaginitis.]**—*Mh. VetMed.* **12,** 73-75. **3081**

Six horses with acute arthritis were cured by volar or plantar injection of 8 ml. of 4% procaine (3 cases) or by intra-articular injection of 8–20 ml. of 2–20% procaine. These methods were regarded as superior to many others at present in use against this condition. Eight out of ten horses with chronic or subacute arthritis or tendovaginitis were cured by 2–5 injections of 125 mg. of hydrocortisone given intra-articularly or into the tendon sheath.—G. P. MARSHALL.

I. ALFEROV, L. Y. (1957). **[Use of procaine lumbar nerve block in veterinary practice.]**—*Veterinariya, Moscow* **34,** No. 2 pp. 38-43. [In Russian.] **3082**

II. MOLS, A. (1957). **[Treatment of colic in horses.]**—*Ibid.* No. 3. p. 89. [In Russian.] **3083**

I. Use of procaine lumbar combined block of the vagus, splanchnic, renal and other nerves, as described by Mosin [*V.B.* **26,** 2715] and Abakumov [*V.B.* **26,** 3552], was recommended for treatment of the following conditions:—toxaemia [ketosis ?] and tympanites in cows; colic in horses; retained placenta and purulent endometritis in cows; catarrhal form of dog distemper.

II. M. stated that the i/v inj. of 1–2 ml. of a 1–2% soln. of procaine, combined with stomach massage, gave excellent results in colic, and was easier to perform than the lumbar nerve block described by Abakumov.—R.M.

KOTOV, S. S. (1955). **[Mineral supplements as a prophylactic against colic in horses.]**—*Trud. mosk. vet. Akad.* **13,** pp. 24-31. [In Russian.] **3084**

K. claimed that colic in stall-fed horses could be prevented by adding to the feed of each horse 40 g. sodium chloride and 15 g. bone meal daily. His conclusion was based on clinical and biochemical study of 106 horses (and 100 controls) for 6 months.—R.M.

BOWDEN, R. S. T., COUGHLAN, R. F. & BROOKS, A. G. (1956). **A transmissible anaemia of cattle in Malaya. (A complex syndrome coded 'R' disease).**—*J. Malay. vet. med. Ass.* **1,** 72-93. **3085**

Attempts to transmit the disease were partly successful. The causal agent could not be definitely established but a combination of pathogenic helminths and pathogenic protozoa was found in the more serious cases. There was no evidence that "R" disease is due to a virus. —E.V.L.

SHEVTSOVA, I. N. (1953). **[Systemic reaction of cattle to intravenous injection of hypertonic solutions of sodium chloride in the normal state and in diseases of the forestomachs.]**—

Trud. mosk. vet. Akad. Ser. A. **8**, pp. 210-226. **3086**

S. studied the action of single doses of hypertonic saline solution (5–20%), administered i/v at 0·1 g. NaCl/kg. body wt., on blood pressure, the white blood picture, and the function of the digestive tract. He concluded that the procedure was an effective treatment for primary atony of the forestomachs and ruminal tympany.

—R.M.

INNES, J. R. M. & PLOWRIGHT, W. (1955). **Focal symmetrical poliomalacia of sheep in Kenya.**—*J. Neuropath.* **14**, 185-197. [Authors' summary modified.] **3087**

A non-febrile, paralytic disorder of sheep occurred during two successive years in the Rift Valley of Kenya, which bore no resemblance to any hitherto described neurological entity affecting domesticated animals or man. The pathology was defined as a focal symmetrical poliomalacia which in 6 of 7 sheep affected only restricted areas of the ventral horns of the gray matter in the cervical, sometimes also lumbar, enlargement of the cord. The lesion was tentatively regarded as an example of pathoclisis (over-sensitivity to a specific toxin), or being caused by some vascular mechanism. Attempts to identify an infectious agent, protozoa, helminths or fungi were unsuccessful.

HARTLEY, W. J. (1956). **A focal symmetrical encephalomalacia of lambs.**—*N. Z. vet. J.* **4**, 129-135. **3088**

A description of a disease entity in lambs in New Zealand, characterized by bilaterally symmetrical focal necrosis of the brain; and a discussion of the differential diagnosis. H. considers there is a possible relationship between this disease and enterotoxaemia.

—L. M. MARKSON.

ICHELSON, R. R. (1957). **Cultivation of spirochaetes from spinal fluids of multiple sclerosis cases and negative controls.**—*Proc. Soc. exp. N.Y.* **95**, 57-58. **3089**

Spirochaetes had been demonstrated in the central nervous system in multiple sclerosis on several occasions in past years but had never been cultivated. A medium is now described by means of which spirochaetes have been isolated from the spinal fluid of 59 of 76 cases.

As multiple sclerosis has some features, especially the difficulty in determining its aetiology, which resemble those of scrapie in sheep this article may be of interest to veterinarians studying scrapie.

GLÄTTLI, H. (1957). Betrachtungen zur Behandlung der Ödemkrankheit der Schweine. [**Treatment of oedema disease in pigs.**]—*Schweiz. Arch. Tierheilk.* **99**, 271-275. [English, French and Italian summaries.] **3090**

G. considers oedema disease of pigs to be an allergic condition caused by certain substances in uncooked food, such as lupin meal, vetch meal, moulds, the avenin contained in oats, and hay pollen. Intestinal parasites or their products may also be a factor. He treats the disease with an anti-allergic preparation, given s/c. If complications are present, an antibiotic, usually penicillin, and a sulphonamide are injected. Acute cases receive perorally 250 mg. of aureomycin. He also considers paralytic myoglobinuria in horses to be an allergy. Two affected horses were successfully treated with a circulatory stimulant given s/c, followed by i/v injection of calcium solution, anti-allergic preparation, and glucose soln.—M.G.G.

GREGORY, D. W. (1957). **Hemolytic *Escherichia coli* in edema disease of pigs.**—*N. Amer. Vet.* **38**, 40. **3091**

Bacteriological studies in 15 outbreaks of oedema disease in pigs revealed that β-haemolytic *E. coli* was consistently the dominant organism in the small intestine. I/v or i/p injection of haemolytic *E. coli* into experimental pigs produced gastric lesions typical of oedema disease. It is postulated that when, under certain conditions, *E. coli* dominates the microflora of the intestinal tract, the haemolytic factor which it produces injures the intestinal epithelium, permitting the absorption of bacterial toxic products which induce oedema disease.

—M.G.G.

PENNY, R. H. C. (1957). **An unusual skin condition in the pig.**—*Vet. Rec.* **69**, 528-530. **3092**

A description of a skin condition appearing in 33 pigs from 9 litters in one herd. Macroscopically it consisted of surface depressions of variable size scattered over the neck, back and flanks. The epidermis was sometimes discoloured. Histologically the lesions were characterized by a derangement of the normal deposition of fat in the subcutaneous tissue.

The litters were sired by two boars from different herds and the condition was unlikely to be hereditary. The only change in the management of the herd was the inclusion of supplements of zinc carbonate as a prophylactic for parakeratosis and chalk in the diet, and though the aetiology of the condition is unknown it is suggested that it may be nutritional in origin.

—W. E. PARISH.

WHITNEY, J. C. (1957). **Atrophic myositis in a dog : the differentiation of this disease from eosinophilic myositis.**—*Vet. Rec.* **69,** 130-131. **3093**

A case of atrophic myositis in a dog is described, and the features in which this condition is believed to differ from eosinophilic myositis are tabulated.—W. E. PARISH.

GERRIETS, E. (1957). Experimentelle Untersuchungen beim enzootischen Herztod des Huhnes. **[Experimental study of round heart disease of fowls.]**—*Berl. Münch. tierärztl. Wschr.* **70,** 238-240. [English summary.] **3094**

In 1956 the incidence of round heart disease in fowls sent for examination from the Berlin-Brandenburg region was 3·5%, against 0·4% in 1953. In 2 fowls the content of zinc in the crop was 0·0003–0·397% and in the internal organs 0·2–0·3%. The owner, who had lost 45 of his 85 birds, was advised not to use a zinc-lined potato-steamer which he had obtained a fortnight before the losses began. Deaths ceased within a week. Brain and organ material from 2 dead birds was injected intracerebrally or intraperitoneally into 4 fowls, but did not produce round heart disease. The disease did not develop in fowls which received daily for 150 days 50 g. of potatoes prepared and stored for 5 days in zinc containers, or 250 mg. of zinc oxide or zinc acetate, or 1,000 mg. of a mixture of equal parts of zinc oxide and zinc acetate, although the birds in the last group were severely poisoned. [See also *V.B.* **21,** 2662 & **26,** 1391.]—M.G.G.

BIERING-SØRENSEN, U. (1956). **On disseminated, focal gliomatosis ("multiple gliomas") and cerebral calcifications in hens.**—*Nord. VetMed.* **8,** 887-901. [In English. German and Danish summaries.] **3095**

Five cases of encephalic gliosis are described which were thought to have their origin in inflammation despite their resemblance to neoplasms. Calcification was also present in the brain of one case. The author proposes the name "disseminated, focal gliomatosis," reserving the term "glioma" for neoplasms. In this interpretation he accepts the views of Jackson, 1948 [*V.B.* **19,** 534]. [Jackson, 1954 (*V.B.* **25,** 2478) recognized a transition from an infiltrative to a proliferative phase, *i.e.*, from inflammation to true neoplasia.]

—L. M. MARKSON.

SUDAKOV, N. A., STRELKOV, V. N. & KURMANOV, I. A. (1955). **[Determination of arterial blood pressure in horses and cattle by the oscillographic method.]**—*Trud. mosk. vet. Akad.* **13,** pp. 87-92. [In Russian.] **3096**

Arterial blood pressure was measured by an oscillometer, presumably connected to a human-type inflatable cuff placed around the base of the tail, as described by Sharabrin [*V.B.* **16,** 1129 & **21,** 2193]. In 90 healthy trotter horses aged 2–5 years the maximum arterial pressure was 90–130 mm.Hg, the minimum was 40–75 mm. and the average was 70–100 mm. In 30 healthy cattle aged 3–9 years the maximum was 100–300 mm., minimum 40–60 mm., and average 70–90 mm.—R.M.

CLARA, I. (1956). Il trattamento delle broncopolmoniti dei vitelli e dei suini con antibiotici per via endotracheale. **[Intratracheal injection of antibiotics in the treatment of bronchopneumonia in calves and pigs.]** *Clin. vet., Milano.* **79,** 198-202. **3097**

In a representative number of calves and pigs, as well as in adult cattle, foals and dogs, with bronchopneumonia excellent results were obtained by slow intermittent intratracheal injection (author's own technique) of a proprietary preparation containing in 100 ml.: tyrothricin 8 mg., chloramphenicol 0·4 g., potassium penicillin 0·25 megaunit and dihydrostreptomycin sulphate 0·5 g. These results were better than those achieved with intratracheal injections of penicillin plus streptomycin, and far superior to those of parenteral treatment with a penicillin-sulphonamide preparation.—G. P. MARSHALL.

COHN, S. H., GONG, J. K. & MILNE, W. L. (1956). **Experimental treatment of poisoning from fission products. Ability of chemical agents to alter the uptake and retention of fission products in animals exposed to radioactive fall-out.**—*Arch. industr. Hlth Chicago* **14,** 533-538. [*Abst. from abst. in Bull. Hyg., Lond.* **32,** 349-350. (1957)]. **3098**

Zirconium citrate, administered to mice one hour before exposure to a mixture of ^{91}Y, ^{89}Sr, ^{238}Th and ^{239}Pu, reduced deposition of these fission products in the skeleton but increased their deposition in the soft tissues, except for the liver. Mice treated with edathamil after exposure had slightly less activity in the head and lungs than controls; when it was given one hour before exposure significant increases in the excretion of the long-lived fission products were observed.—M.G.G.

BILLEN, D. (1957). **Recovery of lethally irradiated mice by treatment with bone marrow cells**

maintained *in vitro*.—*Nature, Lond.* **179,** 574-575. **3099**

Death of mice from acute irradiation with X-rays was prevented by an intravenous injection, within 1–2 hours after irradiation, of a suspension of bone marrow cells which had been maintained in tissue culture for periods up to 21 days. The 11-day cultures gave 100% recovery, but 12 to 14-day cultures were only partially effective and incubation at 25°C. gave better results than at 37°C. Counts were made of the number of nucleated cells injected and the number of viable cells was estimated by means of staining techniques.—W. E. Parish.

Beckett, E. B. & Bourne, G. H. (1957). **Histochemical demonstration of cholinesterase and 5-nucleotidase in normal and diseased human muscle.**—*Nature, Lond.* **179,** 771-772. **3100**

Histochemical techniques were used to demonstrate the presence of cholinesterase and 5-nucleotidase in fresh human muscle tissue. In normal muscle cholinesterase was demonstrable in three types of structure (1) small motor-end plates in rows across the muscle fibres (2) plates in palisades along the long axis of the fibre and (3) plates at the musculotendinous junction. It could also be demonstrated diffusely within the muscle fibres. In the specimens from cases of myopathy and neuropathy there appeared to be a more intense diffuse reaction within the substance of the fibre.

The reaction for 5-nucleotidase was slight or absent in normal muscle, and if present was confined to the walls of the larger blood vessels and nerve fibres. In atrophied degenerating muscle there was a strong positive reaction within the muscle substance.—W. E. Parish.

King, J. S., Jr. & Boyce, W. H. (1957). **Amino acid and carbohydrate composition of the mucoprotein matrix in various calculi.**—*Proc. Soc. exp. Biol., N.Y.* **95,** 183-187. [Authors' summary modified.] **3101**

The amino-acid and carbohydrate content of the organic matrix of submaxillary gland and urinary calculi was studied by paper chomatography, spectrophotometry and microbiological assay. The chromatographic amino-acid pattern was indistinguishable and deoxypentose, hexosamine, and 5 other sugars were present in all matrices. The carbohydrate composition was similar in all except uric acid calculi, which contained no glucose.

See also abst. **3154** (report, Republic of Ireland).

POISONS AND POISONING

Eikmeier, H. & von Sandersleben, J. (1956). Frostschutzmittelvergiftungen bei Haustieren. **[Poisoning of animals with anti-freeze liquids.]**—*Mh. Tierheilk.* **8,** 189-205. **3102**

Poisoning through drinking engine cooling water to which ethylene glycol had been added to prevent freezing was reported in 2 dogs [See also *V.B.* **27,** 2201] and was experimentally reproduced in 2 dogs and 2 fowls. One of the experimental dogs was given a single dose of a commercial preparation of ethylene glycol at a dosage of 10 ml./kg. body wt. It died after 20 hours with signs of cerebral paralysis, circulatory failure, acute gastritis and acute renal insufficiency. The other dog was given pure ethylene glycol at 4·2 ml./kg.: it died after 8 days with similar symptoms, terminating in uraemia. P.M. examination revealed degenerative lesions in the myocardium and kidneys. One fowl was poisoned by 20 ml. of the commercial preparation diluted 1:10 in drinking water and given over 3 days: it died 4 days later. The other fowl was given 46 ml. over 5 days. It recovered from an initially increased thirst with diarrhoea and was killed on the 35th day.—R.M.

Kaszubkiewicz, C., Wartenberg, L. & Zwierzchowski, J. (1957). Zatrucia zjełczałym tranem rybim u lisów srebrzystych. **[Poisoning in foxes with rancid fish oil.]**—*Méd. vét., Varsovie* **13,** 228-233. [In Polish. English and Russian summaries.] **3103**

Nineteen of 272 silver foxes died within 6 weeks and unspecified numbers were ill. Loss of hair, desquamation of epithelium, anorexia, dullness, mucous or muco-purulent discharge from eyes and nostrils, diarrhoea, and in some cases jaundice, were noted. Degenerative lesions in the liver, which had a mottled appearance, was the most constant P.M. finding. Chemical analysis of the oil showed a high degree of rancidity. Five white rats fed a diet containing the rancid oil all died within 6 weeks, while at the same time controls fed an oil-free diet and a diet containing fresh fish oil remained healthy. Histological examination of the liver revealed cloudy swelling, hydropic degeneration of the liver cells, perivascular infiltrations and necrosis of the parenchyma. No evidence of fatty changes was noted.—M. Gitter.

DOLLAHITE, J. W. & ANTHONY, W. V. (1957). **Experimental production of abortion, premature calves and retained placentas by feeding a species of perennial broomweed.**—*Sthwest. Vet.* **10,** 128-131. **3104**

29 Hereford cows, 5–7 months pregnant, were fed broom-weed (*Gutierrizia microcephala*) to a maximum of 8 cwt. (to one animal), grown on sandy land, for periods averaging about 40 days; 7 controls were fed sand sage and 6 fed broomweed grown on hard land. All 13 controls bore full-sized live calves and only one retained the placenta, whereas 15 of the 29 experimental cows retained the placenta and 12 produced dead calves, mostly very undersized. Up to 60% of herds have been observed to undergo similar reproductive disasters on sandy land range. Trace element minerals were fed to all cows and blood tests for brucellosis and leptospirosis were negative.—F. L. M. DAWSON.

BARNETT, B. D., RICHEY, D. J. & MORGAN, C. L. (1957). **Effect of beta-aminopropionitrile on reproduction of chickens.**—*Proc. Soc. exp. Biol., N.Y.* **95,** 101-104. [Abst. from Authors' summary.] **3105**

Mono-beta-aminopropionitrile fumarate (the active principle of *Lathyrus odoratus* seeds) at 0·03% and 0·06% of the diet of laying hens reduced egg production from 62% to 29% and from 62% to 12% respectively. After 4 weeks 33% of all eggs laid were soft shelled at the 0·03% level and 78% were soft shelled at the 0·06%. At 0·01% of the diet the drug did not affect egg production or shell formation. Hatchability of fertile eggs was decreased by levels of 0·01%, 0·03% and 0·06%. It was reduced to 4% by 0·01%, compared with the control at 61%, to 0·03% after 4 weeks and to 0 in 3 weeks by 0·06% of the drug. After withdrawal of the drug both egg production and hatchability increased and the percentage of soft-shelled eggs decreased. Haemorrhages were found in 40% to 80% of the dead embryos from the groups fed 0·03% and 0·06% of the drug.

PERRIN, D. D. (1957). **Photosensitivity diseases in New Zealand. X. The guinea pig as an experimental animal in the investigation of facial eczema.**—*N. Z. J. Sci. Tech.* **38,** 669-679. [Author's summary modified.] **3106**

Guinea pigs were used to test dried herbage samples, and extracts prepared from them, for the factor which produces the liver damage typical of facial eczema. Grades of liver damage produced under standard conditions are outlined. Liver damage continues when g. pigs are returned to normal diets. Bilirubinaemia and mild photosensitivity have been produced in g. pigs fed highly toxic dried herbage and extracts, but, with most of the toxic samples available, liver function tests revealed little abnormality. Hepatomegaly was regularly found in g. pigs with severe facial eczema liver damage. Rats, mice, and chickens do not appear to be sensitive to the liver-damaging substance.

VIGNE, J.-P., CHOUTEAU, J., TABAU, R.-L., RANCIEN, P. & KARAMANIAN, A. (1957). Sur le métabolisme d'un insecticide organophosporé, le diéthylthionophosphate de 2 isopropyl 4 méthyl 6 oxypyrimidine chez la chèvre. [**Metabolism of the insecticide diazinon in goats.**]—*Bull. Acad. vét. Fr.* **30,** 85-92. **3107**

A goat received orally 236 mg. of diazinon marked with radioactive phosphorus. Measurement of the anti-cholinesterase activity and organic phosphorus content of the urine, faeces, blood and milk revealed that none of the insecticide was excreted in the milk and faeces, and only 2 mg. in the urine. To account for the radioactivity of these materials, it is concluded that the insecticide was largely metabolized, and the ^{32}P eliminated in the form of phosphates other than that of diazinon.—M.G.G.

See also abstr. **3098** (radioactive fall-out); **3147** (report, Australia).

PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections see under the appropriate disease)

NIKITIN, E. E. (1956). [**Causes of pyrogenic reactions in cows given intravenous injections.**]—*Trud. novocherkassk. zoo.-vet. Inst.* **9,** pp. 220-223. [In Russian.] **3108**

Distilled water stored under non-sterile conditions often contained 16–700 colonies/ml. of saprophytic organisms after 3–30 days. Pyrogenic reactions were apparently caused by the metabolic products of these organisms, rather than by the organisms themselves. Two experiments indicated that a reaction could be prevented if 100–200 ml. of 0·5% procaine soln. was given i/v 15 min. before the main injection.—R.M.

BASS, J. A., ENGLEY, F. B., JR., MITCHELL, R. B. & BLOCKER, T. G., JR. (1957). **Evaluation of a rapid (hemoglobin reduction) method**

for determining antibiotic susceptibility of microorganisms.—*Antibiot. & Chemother.* **7,** 140-145. [Spanish summary p. 153. Authors' summary modified.] **3109**

From a preliminary evaluation of the rapid disc method described by Jackson *et al.* [(1954). *Tex. Rep. Biol. Med.* **12,** 171] it was concluded that:— Using moderately heavy inocula, results could be obtained within 2–4 hours which correlated well with the standard disc method, especially with discs containing the highest concentration of antibiotic. Comparison of results by the two disc methods with those obtained by the tube dilution method generally showed only a slightly higher degree of agreement between the standard disc method and the tube dilution method than between the rapid method and the tube dilution values. The degree of agreement between the disc methods and the tube dilution method was shown to vary with the disc antibiotic concentration as well as with the size of inoculum used in the tube titrations. The rapid technique appears promising enough to warrant investigation of factors affecting the results as well as application to clinical specimens.

ANDREWS, E. D., GALL, L. S. & HART, L. I. (1957). **Effects of large oral doses of penicillin on pasture-fed lambs.**—*N. Z. J. Sci. Tech.* Sect. A. **38,** 649-653. [Authors' summary slightly modified.] **3110**

Pasture-fed lambs averaging 40 lb. body-wt. were each given three doses of 150,000 units of crystalline sodium penicillin G orally, at intervals of 3 days and 2 days between the first and second, and second and third doses respectively. Seven days after the first dose, penicillin-treated lambs had on an average lost weight, whereas during the same period controls showed a mean weight increase. Examination of rumen samples showed no definite evidence that penicillin had affected rumen vitamin B_{12} activity. On the other hand rumen function was adversely affected 3 days after the first dose and after subsequent doses. After withdrawal of the antibiotic, recovery, as judged by mean weight increase and rumen-function tests, occurred within 14 days.

HVIDSTEN, H. & GROTLI, B. (1956). **Experiments on subcutaneous implantation of antibiotics in pellet form on suckling pigs.**—*Acta agric. scand.* **6,** 138-140. [In English. Authors' summary modified.] **3111**

Experiments on implantation of bacitracin or bacitracin plus penicillin in pellet form were carried out in 52 young pigs in 6 litters. The animals that had received implantations of antibiotics, as well as the controls, stayed with their dams throughout the experiment. No effect could be observed on gain in weight and health of animals.

FAULKNER, W. R. & BLOOD, F. R. (1957). **Effect of cobalt administration on myoglobin content.**—*Proc. Soc. exp. Biol., N.Y.* **95,** 64-65. [Authors' summary copied verbatim.] **3112**

Administration of cobalt to rats at a level sufficient to produce a marked polycythemia did not alter myoglobin concentration.

JUSZKIEWICZ, T. & PATYRA, S. (1955). Badania nad własościami leczniczymi chlorofilu. I. Wpływ chlorofilu na gojenie się ran doświadczalnych. [**Studies on therapeutic properties of chlorophyll. I. Influence of chlorophyll on the healing of experimental wounds.**]—*Ann. Univ. M. Curie-Skłodowska* Sect. DD. **10,** 67-81. [In Polish. English and Russian summaries.] **3113**

PATYRA, S. & JUSZKIEWICZ, T. (1955). Badania nad własnościami leczniczymi chlorofilu. II. Zmiany we krwi obwodowej u królików pod wpływem chlorofilu. [**Studies on therapeutic properties of chlorophyll. II. The changes in the peripheral blood of rabbits under influence of chlorophyll.**]—*Ibid.* 83-92. [In Polish. English and Russian summaries.] **3114**

I. Chlorophyll ointment stimulated the healing of experimentally inflicted wounds in rabbits infected with *Staph. aureus,* by accelerating the formation of granulation tissue and growth of surface epithelium: better results were obtained with penicillin-chlorophyll ointment. In another experiment s/c injections of 1% solution of the sodium salt of chlorophyll every 5th day, speeded the healing of experimentally inflicted, but not infected, wounds. In a control group given s/c injections of normal saline healing took 5–6 days longer, was not uniform, and the wounds frequently reopened.

II. A 1% solution of the sodium salt of chlorophyll injected s/c at weekly intervals, in doses of 0·005 g. per kg. body wt. resulted in temporary increase in the numbers of r.b.c. and platelets and rise in Hb level. Four weeks after the last injection the r.b.c. and platelets returned to normal but the Hb level was still rising. No significant changes were noted in the w.b.c. series. It is suggested that chlorophyll may be useful in treatment of some forms of anaemia.

—M. GITTER.

Popper, H., Dubin, A., Bruce, C., Kent, G. & Kushner, D. (1957). **Effect of chlorpromazine upon experimental hepatic injury.**—*J. Lab. clin. Med.* **49**, 767-773. [Authors' summary modified.] **3115**

Feeding chlorpromazine to rats did not retard growth nor produce significant histological or biochemical changes. Administration of chlorpromazine to rats with hepatic injury slightly depressed growth, but did not significantly enhance the hepatic, histological or biochemical changes. But its administration to rats with single cell hepatic necrosis from ethionine aggravated the histological changes, the fall in hepatic esterase and the increase in hepatic alkaline phosphatase, and also induced hyperbilirubinaemia and bilirubinuria. The effect on the morphological and functional manifestations of hepatic injury induced by ethionine might serve to test the hepatoxic activity of substances pharmacologically similar to chlorpromazine.

Klug, H.-J. (1957). Untersuchungen über die Kombination von "Spasmonal" und "Kap" und die Verwendbarkeit des Kombinationspräparates mit "Propaphenin" zur potenzierten Narkose. [**Combination of "Spasmonal" and "Kap" and of "Propaphenin" for potentiated narcosis.**]—*Mh. VetMed.* **12**, 106-110. **3116**

K. investigated the spasmolytic activity of "Kap" (methadone hydrochloride) and "Spasmonal" (α-phenyl-α-piperidinoacetic acid-β-piperidinoethyl ester bis-hydrochloride) on the isolated cat intestine and found a mixture of "Spasmonal" 2·5 mg. and methadone 5 mg./ml. to have adequate activity for practical purposes. 0·25–0·75 ml. of this combination per kg. body wt. given (presumably i/m) 30 min. after 0·5 ml./kg. of a 0·5% solution of chlorpromazine hydrochloride ("Propaphenin") provided adequate and safe anaesthesia in dogs.

—G. P. Marshall.

Gadzhiev, M. A. (1955). [**Non-inhalation narcosis in buffaloes.**]—*Trud. mosk. vet. Akad.*, **9**, pp. 236-247. **3117**

In some respects buffaloes reacted differently than cattle to non-volatile anaesthetics. The most satisfactory drug was chloral hydrate, which gave complete anaesthesia at 0·13–0·18 g./kg. body wt., administered i/v. Rectal administration was not recommended. Hexobarbitone sodium ("hexenal") gave complete anaesthesia lasting about 30 min. after i/v inj. of 20 mg./kg., but because of severe depression of respiration at this dosage and excitement upon recovery, it was recommended only as a basal narcotic at 10–15 mg./kg. i/v or 23–25 mg./kg. i/p. Thiopentone provided satisfactory basal narcosis lasting for 5–17 min. when given i/v at 5–10 mg./kg., but it often caused vomiting at the moment of induction. Oral administration of alcohol (90% proof) at a dosage of 6·6 ml./kg. provided superficial narcosis lasting for 2 hours.—R.M.

Hall, L. W. (1957). **Bromochlorotrifluoroethane ("Fluothane"): a new volatile anaesthetic agent.**—*Vet. Rec.* **69**, 615-618. **3118**

Trials were carried out on 3 horses, 4 cattle, 38 pigs, 49 dogs and 6 cats. Induction of anaesthesia was smooth and rapid and recovery was rapid. Anaesthesia was adequate for most surgical operations but satisfactory muscle relaxation for intra-abdominal operations was not possible while the patient was breathing spontaneously. Blood pressure and pulse rate were decreased but were not considered harmful provided there is no excessive loss of blood. Depression of the respiration, a constant feature of the anaesthetic, can be so severe as to necessitate controlled or assisted respiration. It is considered that this agent may be of value in veterinary practice particularly in minor operations.—T.E.G.R.

Preobrazhenskii, L. M., Kazakova, M. V. & Khalenev, A. P. (1955). [**Effect of anaesthetics on fur-bearing animals.**]—*Trud. mosk. vet. Akad.*, **9**, pp. 97-102. [In Russian.] **3119**

Complete anaesthesia, lasting for 55–70 min., was obtained in silver foxes by the i/v inj. of 0·3 g./kg. body wt. of chloral hydrate, as a 10% soln. When administered rectally, the anaesthetic dosage was very close to the lethal dosage (0·75 g./kg.). In the arctic fox, the rectal administration of 0·5 g./kg., as a 10% soln. in mucilage, caused depression after 8 min. and sleep which lasted about 2 hours. The same rectal dosage was lethal for mink.

The action of a s/c inj. of morphine hydrochloride on the silver fox was similar to its action on dogs; 0·1 g./kg. caused a narcotic state lasting 24 hours, while 0·2 g./kg. was sometimes lethal. Deep sleep lasting 6–10 hours was produced in sable and martens by 0·01 g./kg. and in mink by 0·025 g./kg., but these dosages had no narcotic effect on arctic foxes.

The anaesthetic dosage of hexobarbitone sodium for the silver fox was 0·5 g./kg: rapid administration caused many deaths. Alcohol

(90° proof) caused depression in foxes about 20 min. after administration by stomach tube of 5 ml./kg. body wt., diluted 1 : 3 with water; this was followed by 3–4 hours' sleep. A dosage of 7·5 ml./kg. caused deep narcosis, which sometimes lasted for 24 hours.—R.M.

See also abstr. **2877-2878** & **2880** (penicillin); **2883** (mastitis); **2904** (summer mastitis); **2920-2924** (salmonellosis); **2933** & **2939** (brucellosis); **2954** (sensitivity of some microorganisms to chemotherapeutics); **2963** (bovine contagious pleuropneumonia); **2968** (trypanosomiasis); **2969** (phenanthridines); **2971** (blackhead); **2975** (coccidiosis); **2977-2978** (piroplasmosis); **2985** (tetracycline in Aujeszky's disease); **2991-2993** (virus diseases); **3001** (cortisone in bovine keratoconjunctivitis); **3013** (furazolidone); **3014** (ornithosis); **3025-3026, 3029-3032, 3034** & **3107** (insecticides); **3041, 3050, 3052, 3054-3058** (anthelmintics); **3081** (hydrocortisone in arthritis and tendovaginitis); **3082** (procaine lumbar nerve block); **3090** (oedema disease); **3097** (bronchopneumonia); **3098** (treatment of poisoning from fission products)

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

HERS, H. G. (1957). **Presence of sorbitol in seminal vesicles and in foetal blood of the sheep.**—*Biochem. J.* **66,** No. 2. pp. 30P of Proceedings. [Abst. from author's abst.] **3120**

A non-ionic, non-reducing, non-fermentable polyol, tentatively identified as sorbitol by paper chromatography, was detected in extracts from seminal vesicles and in foetal blood of sheep. Its concentration represents 40% and 80% of that of fructose in both materials.

KANTER, G. S. (1957). **Hypoglycemic effect of high environmental temperature on dogs.**—*Amer. J. Physiol.* **188,** 443-450. [Abst. from author's abst.] **3121**

Exposure of unanaesthetized dogs to high environmental temp. (120°F.) and low humidity (below 20%) for 4 hours with no water available for drinking, resulted in a fall in both whole blood and plasma glucose concentration, in spite of the dehydration which also occurred.

BAER, J. E., PECK, H. M. & MCKINNEY, S. E. (1957). **Some normal laboratory values in the dog.**—*Proc. Soc. exp. Biol., N.Y.* **95,** 80-84. **3122**

Blood and urine values of over 100 clinically healthy dogs on a standard diet were ascertained. The procedures employed are described and results discussed.—T.E.G.R.

DANCIS, J., WORTH, M., JR. & SCHNEIDAU, P. B. (1957). **Effect of electrolyte disturbances in the pregnant rabbit on the fetus.**—*Amer. J. Physiol.* **188,** 535-537. [Abst. from authors' summary.] **3123**

The possibility that the placenta may protect the foetus against electrolyte disturbances in the mother was investigated in rabbits. Hyperosmolarity of the blood of the doe was induced with i/v infusions of hypertonic sucrose. The osmotic pressure of the foetal blood approximated that of the mother within an hour. Acidosis was induced with ammonium chloride: The maternal plasma chlorides were increased for roughly 3 hours before the foetal chlorides showed similar increases. However, after prolonged acidosis the foetal electrolyte changes paralleled the maternal with a lowered pH and CO_2 content and elevated plasma chlorides.

CAIRNS, H. J. F. & FAZEKAS DE ST. GROTH, S. (1957). **The number of allantoic cells in the chick embryo.** — *J. Immunol.* **78,** 191-200. [Authors' summary modified.] **3124**

The number of allantoic cells in the chick embryo was determined for each day of the 2nd week of incubation. Between the 8th and 13th days the number rose from $2{\cdot}3 \times 10^7$ to $1{\cdot}0 \times 10^8$. Part of the increase per unit area of membrane was due to the formation of a second deeper layer of cells. Certain virological implications of these findings were discussed.

TRUBOWITZ, S., FELDMAN, D., BENANTE, C. & KIRMAN, D. (1957). **Metal requirements of alkaline phosphatases of human and rabbit leukocytes.**—*Proc. Soc. exp. Biol., N.Y.* **95,** 35-38. [Authors' summary modified] **3125**

Ethylenediamine tetra-acetic acid inhibited alkaline phosphatase activity of the human leucocyte but not of the rabbit leucocyte. It is considered that there are two alkaline phosphatases in the human leucocyte; one requiring magnesium and the other zinc for its activation.

WEISS, H. S., RINGER, R. K. & STURKIE, P. D. (1957). **Development of the sex difference in blood pressure of the chick.**—*Amer. J. Physiol.* **188,** 383-386. [Authors' abst. modified.] **3126**

To establish the age and manner in which the sex difference in blood pressure of adult White Leghorn fowls develops, periodic blood pressure measurements were made on chicks between 3 and 34 weeks of age. Between the 8th and 13th weeks pressures began to diverge, and within 4–8 weeks a 26–30 mm. sex difference in systolic pressure developed. Significant divergences occurred also in diastolic and pulse pressure. The sex divergence was due primarily to a rise of pressure in the male, the female level remaining comparatively stable.

ANDREW, W. & PRUETT, D. (1957). **Senile changes in the kidneys of Wistar Institute rats.**—*Amer. J. Anat.* **100,** 51-79. [Abst. from authors' summary and conclusions.] **3127**

From a histological study of the kidneys of 50 rats the authors concluded that:—(1) Arteriosclerosis and arteriolosclerosis as described for the senile human kidney did not appear to any noticeable extent in old rats. (2) There was little fibrosis of glomeruli. (3) The great majority of the Malpighian corpuscles of the senile kidney had a more pronounced basement-membrane and a greater dilatation of glomerular capillaries than those of younger rats. (4) Glomeruli (glomerular tufts) of senile rats were considerably larger on an average than those of young (75–100 day) and of "middle-aged" (300 day) rats.

VAN DYKE, D. C., SIMPSON, M. E., LEPKOVSKY, S., KONEFF, A. A. & BROBECK, J. R. (1957). **Hypothalamic control of pituitary function and corpus luteum formation in the rat.**—*Proc. Soc. exp. Biol., N. Y.* **95,** 1-5. **3128**

Bilateral hypothalamic lesions ventral to the ventromedial nucleus caused persistent cornification of the vagina—the ovaries containing follicles but no corpora lutea—and in obese rats there was increased thyroid activity, manifested by morphology of the gland and by I^{131} uptake. There was no atrophy of interstitial tissue. Luteinizing substances caused ripening of the follicles and the conclusion is drawn that the above lesions possibly inhibit secretion of luteinizing factor by the pituitary gland.—T.E.G.R.

ERÄNKÖ, O. (1957). **Distribution of adrenaline and noradrenaline in the hen adrenal gland.**—*Nature, Lond.* **179,** 417-418. **3129**

Slices of fresh adrenals from adult, egg-laying hens were examined for the chromaffin reaction, the formalin-induced fluorescence, and the iodate reaction to determine the distribution of noradrenaline and adrenaline. The results suggested that the two kinds of adrenomedullary cells are independent of each other, and that the quality of the catechol amine they secrete is not decisively dependent on the concentration of cortical hormones in the blood surrounding them.

—D. S. PAPWORTH.

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

SHANNON, W. G. & STADELMAN, W. J. (1957). **The efficacy of chlortetracycline at several temperatures in controlling spoilage of poultry meat.**—*Poult. Sci.* **36,** 121-123. **3130**

The spoilage of fresh poultry meat held at chilling temperatures is predominantly bacterial, and in the U.S.A. a high percentage of poultry is retailed as fryer chickens, most of which are delivered direct to the final consumer without freezing. Freshly eviscerated poultry, immersed for 15 min. in cold water containing 10 p.p.m. of chlortetracycline before storage at 32°, 37°, 42°, 47° and 68°F., remained unspoiled longer at each of these temperatures than did controls dipped in cold water alone. Though the increase in keeping quality in both treated and untreated poultry was progressively greater as the temperature decreased from 68° to 32°F., the differences in length of storage were significant at all levels.—H. THORNTON.

TAYLOR, J. H. (1956). **Chlortetracycline in the preservation of perishable foods.**—*Tech. Bull. Cyanamid Products Ltd.* No. 2. pp. 20. **3131**

Of the broad spectrum antibiotics chlortetracycline was the most effective in delaying bacterial spoilage of poultry, beef and fish. Eviscerated chickens immersed in icewater containing chlortetracycline have been stored at refrigeration temperatures for an extra 7–14 days compared with untreated birds. Red meat treated by infusion with a solution of the antibiotic may be hung at room temp. for at least 48 hours after slaughter, and investigations are being made into the value of spraying the surface of carcasses with a solution of chlortetracycline as an adjunct to chilling in the long-distance transport of meat to Great Britain. Detectable chlortetracycline is destroyed by the normal cooking procedures in poultry, fish, and probably red meat, but the antibiotic can be used effectively on fresh clean food only and is not efficacious in controlling the growth of moulds.

—H. THORNTON.

See also abstr. **2875** (growth of Staph. aureus with reference to food poisoning); **2888-2890** (TB. in milk and meat); **2895** (TB. in man from a dog); **2896** (TB. in cats); **2919** (demonstration of coliform bacteria in faeces, milk and water); **2925** (Salmonella in egg products); **2945-2947** (leptospirosis); **2990** (cow pox in man).

REPRODUCTION AND REPRODUCTIVE DISORDERS

LAKE, P. E. (1957). **Fowl semen as collected by the massage method.**—*J. agric. Sci.* **49,** 120-126. [Author's summary modified.] **3132**

The ejaculation response of cocks to lumbar massage was described. A list of the crude fluid components obtained is given. From these observations and chemical tests of the contents of the hen's vagina after natural and artificial insemination, it was deduced that the normal ejaculate is composed mainly of contents from the vasa deferentia, with some secretions from the mucosal glands of the vascular bodies and lymph folds. The blood plasma transudate which is sometimes expelled is due to compression of the terminal organs during collection. The findings were discussed.

DAN, J. C. (1956). **The acrosome reaction.** In International Review of Cytology. Vol. V. pp. 365-393. [London: Academic Books Ltd.] **3133**

The spermatozoa of echinoderms and marine molluscs and worms were studied; an acrosome granule is typically extruded, on a filament, upon the approach to ova. Some such acrosomes were shown on analysis to contain a lysin dissolving the vitelline membrane. It is suggested that the filament may assist direct traction of the spermatozoon into the cytoplasm of the ovum.—F. L. M. DAWSON.

POPE, G. S., MCNAUGHTON, M. J. & JONES, H. E. H. (1957). **The isolation of oestrone from the urine of cows in late pregnancy.**—*Biochem. J.* **66,** 206-209. [Authors' summary modified.] **3134**

Oestrone was isolated from the acid-hydrolysed urine of cows in late pregnancy in amounts of about 0·3 mg./litre. At least one other hydrophilic oestrogen was present.

FRIEDMAN, M. H. (1957). **The effect of O-diazoacetyl-L-serine (azaserine) on the pregnancy of the dog. A preliminary report.**—*J. Amer. vet. med. Ass.* **130,** 159-162. **3135**

5 mg./kg. body wt. of the drug was injected i/m daily for three days to 17 bitches from 19 to 53 days after mating. Three, which were 29–53 days pregnant, continued uneventfully to term; in all the remainder, 19–23 days pregnant, the foetuses were resorbed or macerated, only one normal full term whelp resulting from these 14 pregnancies. The drug is suggested as an improvement on oestrogens for dealing with misalliance.—F. L. M. DAWSON.

HIGNETT, S. L. (1956). **The influence of calcium, phosphorus, manganese and vitamin D on heifer fertility.** — *IIIrd. Int. Congr. Anim. Reprod., Cambridge,* Plenary Papers, pp. 116-123. **3136**

The fertility of heifers was related to a figure obtained by dividing the square of the phosphorus intake by the calcium intake; when the figure was higher than about 2, fertility was good. Fertility was also experimentally related to manganese intake. All heifers in the experiments described were given 4,800 i.u. vitamin D daily.—F. L. M. DAWSON.

DUTT, R. H. & SIMPSON, E. C. (1957). **Environmental temperature and fertility of South-down rams early in the breeding season.**—*J. Anim. Sci.* **16,** 136-143. **3137**

3 rams were kept in a cool room (45°F.) from June to September, 3 control rams at natural temperatures (daily maxima 79° to 83°F.). Service continued from 22nd August–25th September, each ram furnished semen for 10 ewes slaughtered 3 days after service and 10 kept until lambing. Semen quality appeared much higher in the "cool" rams, as also were both fertilization rate and lambing rate; the rate of foetal death loss did not differ significantly in the two groups.—F. L. M. DAWSON.

STEVENS, L. C., RUSSELL, E. S. & SOUTHARD, J. L. (1957). **Evidence on inheritance of muscular dystrophy in an inbred strain of mice using ovarian transplantation.**—*Proc. Soc. exp. Biol., N.Y.* **95,** 161-164. **3138**

Females with ovarian grafts from dystrophic donors produced normal offspring when mated with normal males. Muscular dystrophy was observed in 44% of the offspring of the same females mated with heterozygous males; and 19% of the young were affected when normal heterozygous offspring were mated *inter se.* It is considered that these results support the view that the disease is an inherited autosomal recessive character.—T.E.G.R.

See also absts. **2897** (beta-haemolytic streptococci in horse semen); **2929-2940** (brucellosis); **2952** (vibrionic abortion in cattle); **3065** (in relation to nutrition); **3104** (disorders in cows caused by broomweed); **3105** (effect of active principle of Lathyrus odoratus seeds on avian reproduction); **3147** (report, Australia).

ZOOTECHNY

LODGE, G. A. (1957). **Milking sows by machine.**—*J. agric. Sci.* **49,** 127-128. [Author's summary modified.] **3139**

A milking machine for the study of lactation in sows and the technique employed are described.

HAYES, F. A., JENKINS, J. H., FEURT, S. D. & CROCKFORD, J. A. (1957). **Observations on the use of nicotine for immobilizing semiwild goats.**—*J. Amer. vet. med. Ass.* **130,** 479-482. **3140**

Nicotine and several of its salts (sulphate, tartrate, lactate and salicylate) were tested on 36 half wild goats. They were administered by injection or by means of a dart fired from an air-gun within a range of 30 yards. There was a transitory period of excitement, followed by varying degrees of catelepsy and paralysis of the skeletal muscles lasting for 10–60 min. Respiration was somewhat laboured, but at no time was cyanosis evident. There was marked salivation and some coughing. The corneal reflex remained. The optimum dose was 0·55–1·5 mg./lb. body wt. Of the nicotine salts, the sulphate and the salicylate were the most effective. S/c or i/p administration retarded or prevented the effects of the drug; the i/m route was therefore used. No detrimental effects on the goats were seen up to 9 months later. Nicotine salicylate, delivered by dart, was also used to capture about 200 deer. The mortality of 9% does not exceed that of many other trapping methods. The effects of the drug were similar to those in goats.—M.G.G.

SINELL, H. -J. & WITTKE, G. (1957). Milchsäurebestimmungen im Blut transportermüdeter Schweine. **[Demonstration of lactic acid in the blood of pigs after transport.]**—*Berl. Münch. tierärztl. Wschr.* **70,** 219-221. [English summary.] **3141**

The concentrations of lactic acid in the blood of 10 pigs immediately after a journey of 48 hours in very hot weather were between 26·4 and 89 mg.%; 27 hours later the concentrations were below 28 mg.% in all except 2 of the animals. In a second group of 2 pigs with transport fatigue the concentrations were 45 and 49·6 mg.%, and 3 hours later 21·2 and 22·4 mg.%. In 3 control pigs bled at weekly intervals the average concentrations were 13·3, 13·7 and 17·1 mg.%. It is concluded that, because of the rapid decreases during recuperation, the conc. of lactic acid does not indicate when an animal is fit for slaughter.—M.G.G.

TECHNIQUE AND APPARATUS

STEPHEN, R. C. (1957). **A simple spore trap.**—*Nature, Lond.* **179,** 1360-1361. **3142**

The apparatus was made of aluminium and consisted essentially of a convergent cone, which faced into the wind, leading into a similar divergent cone fitted with 2 wind vanes. The flare diameter of $7\frac{1}{2}$ in. narrowed to one of $3\frac{3}{4}$ flare diameter of $7\frac{1}{2}$ in. narrowed to one of $3\frac{3}{4}$ in. over a 12 in. length, at which point the diameter remained constant for a length of 2 in. and gave a smooth sliding fit into the similar part of the divergent cone. This central 2 in. length accommodated 2 microscope slides tilted at an angle of 30° to the horizontal and was fitted with an oil-immersed spindle in a tube mounting for free rotation.—E.V.L.

SMITH, F. & MENCKEN, C. (1957). **Pipetting machine with rapid preset.**—*Proc. Soc. exp. Biol., N.Y.* **95,** 53-54. [Authors' summary modified.] **3143**

A pre-selector pipette for the repeated delivery of fluid volumes in the range of 0·01 to 0·60 ml. is described. A counter and its associated parts drive a stainless steel plunger, displacing the fluid in a glass cylinder at such rate that one count represents a delivered volume of 0·01 ml. The pipette may be set for counts up to 60. The apparatus is accurate, easy to handle and saves time when large numbers of operations are involved.

STEEDMAN, H. F. (1957). **Polyester wax. A new ribboning embedding medium for histology.**—*Nature, Lond.* **179,** 1345. **3144**

Details are given of the properties and method of using a polyester wax prepared from 400 polythylene glycol distearate, 99 g. and cetyl alcohol (as an extending agent) 1 g. This wax has several advantages over paraffin wax; in particular its low melting point, 37°C., reduces hardening and shrinkage of tissues and permits its use without expensive infiltration ovens. —E.V.L.

NAJAR, L. & RAPPAPORT, A. M. (1957). **A double yoke harness for prolonged immobilization of small animals.**—*Proc. Soc. exp. Biol., N.Y.* **95,** 65-66. [Authors' summary

slightly modified.] **3145**

A method is described for immobilization of small animals in a metal double yoke harness to carry out prolonged infusions. The harness is well tolerated and permits a degree of movement necessary for the well-being of the animal.

See also abstr. **2875** (growth of Staph. aureus with reference to food poisoning); **2919** (demonstration of coliform bacteria in faeces, milk and water); **2955** (counting live and dead bacteria with the aid of membrane filters); **2956** (differentiation of micro-organisms by infra-red spectra of extracts); **2970** (cultivation of Tr. foetus); **2994** (cultivation of tick encephalitis virus); **3000** (cultivation of mucosal disease in time culture); **3008** (growth of myxoma virus in tissue culture); **3160** (book, laboratory administration).

MISCELLANEOUS

MORGAN, C. E. (1957). **Drug administration to racing animals.**—*J. Amer. vet. med. Ass.* **130,** 240-243. **3146**

More than 36 different drugs have been detected in racing animals, but in recent years the 3 most popular ones have been amphetamine, caffeine, and procaine. In the U.S.A. the number of cases detected is 40 or 50 each year. The most suitable materials for their demonstration are the saliva and urine, and samples of both must be taken. One method of collecting the saliva is to allow the horse to chew on gauze pads saturated in 1% acetic acid. A tray is held to collect the drippings. Finally, the inside of the mouth is wiped with a dry pad. Examination of horses before the race must include the eyes and the respiration and pulse rates.—M.G.G.

REPORTS

AUSTRALIA. QUEENSLAND. (1955). **Annual Report of the Department of Agriculture and Stock for the year 1954-55.** pp. 99. Brisbane: A. H. Tucker, Govt. Printer. [Report of the Division of Animal Industry pp. 18-23 and 56-75. WEBSTER, W.] **3147**

The campaign for the eradication of bovine TUBERCULOSIS was extended as more veterinarians began practice in rural regions. The number of cattle under test was increased by about 100,000. In 431,833 cattle in 7,521 herds tested by approved veterinary surgeons the incidence ranged from 0·08 to 1·99%. In approximately 20,000 cattle tested by government veterinary officers the incidence ranged from 0·23 to 3·0%. The incidence in beef cattle was studied by examination of carcasses at meat works. In some problem herds the incidence was 10%. MELIOIDOSIS was diagnosed in sheep and pigs near Townsville. The arthritic form of SWINE ERYSIPELAS has long been recognized in Queensland, but in 1954 the septicaemic type of the disease was seen. SALMONELLOSIS and GLÄSSER'S DISEASE were prevalent in pigs. BRUCELLOSIS continues to be the greatest single source of infertility in cattle in spite of the general success of Strain 19 vaccination. Only 15% of heifer replacements were vaccinated. Bacteriological examination of the semen, by a modified acid-fast stain or by culture, is a more reliable method of diagnosis of BRUCELLOSIS in rams than the intradermal test. Serum and mucus agglutination tests have confirmed that VIBRIOSIS is widespread. It does not appear to be self-limiting in Queensland and a planned campaign of controlled breeding, and in some cases antibiotic treatment, is necessary for eradication. LEPTOSPIROSIS was prevalent in pigs and calves. Outbreaks in adult cattle were characterized by abortion, jaundice, mastitis and cessation of lactation. Haemoglobinuria was usually not present in adults. Most cases were due to *L. pomona*. Abortions and stillbirths occurred in pigs but in many piggeries no disease occurred in spite of the presence of positive agglutinins. After sows had thrown off infection by *L. pomona* they bore normal litters. Studies have begun on *L. hyos*. Ophthalmia in horses was accompanied by positive agglutinins to *L. pomona*. The Queensland strain of *Trichomonas foetus* was typed as a Belfast serotype.

Incorporation of buttermilk powder in the ration of fowls reduced mortality from artificially induced CAECAL COCCIDIOSIS, but results were often difficult to interpret owing to variations in susceptibility between strains from different hatcheries. TICK FEVER was prevalent and there were some cases of ANAPLASMOSIS. Avian ENCEPHALOMYELITIS has been transmitted by intracerebral injection of brain emulsion. A disease resembling BLUECOMB DISEASE has been recognized in Queensland for some years, with swelling and focal necrosis of the liver, distorted soft yolks, degeneration of pectoral muscles, catarrhal enteritis and slight nephritis. In recent cases nephritis was the chief lesion.

The stickfast flea has been reported in Townsville. Trials of new insecticides against BODY STRIKE in sheep were continued. Sheep were treated by spraying a strip 12 inches wide along the back, either as a jet to saturate the fleece to the skin, or as a surface spray to wet

the tip of the fleece. None of the insecticides, D.D.T., B.H.C., aldrin, dieldrin, malathion or diazinon prevented oviposition for long periods. Even D.D.T. at 1% and dieldrin at 0·25% allowed oviposition at 5 weeks after treatment. "Jetting" gave much longer protection against the development of maggots than tip spraying. Dieldrin, aldrin and diazinon gave protection up to 12–17 weeks. For the first time in a decade POISONING by ingestion of sawfly larvae (*Platypsectra interrupta*) was responsible for losses in cattle. The toxic principle was present in both living and dead larvae and resisted heating to 100°C. Affected cattle showed depraved appetite and the soil licked by them was high in sodium sulphate, sodium chloride and phosphorus. Strains resistant to B.H.C. were known to exist; there appears to be a strain resistant to D.D.T., and resistance to chlordane and toxaphene is extending. Heavy mortality was experienced in weaner cattle from TICK PARALYSIS due to *Ixodes holocyclus*. Treatment with D.D.T. and a move to fresh pasture checked losses. Organic phosphorus insecticides, especially parathion, diazinon and malathion, were tested against cattle ticks by spraying, with promising results. No toxic effects were observed.

The season favoured widespread HELMINTH INFESTATION in sheep and cattle. SPARGANOSIS (plerocercoid of *Diphyllobothrium erinacei*) was diagnosed in pigs in 6 districts, chiefly in feral, but also in domestic, pigs.

COPPER DEFICIENCY was diagnosed in a number of districts, not always associated with wasting diarrhoea. There was some correlation between COPPER DEFICIENCY and STERILITY in cattle.

PLANT POISONING was associated with *Chenopodium auricomum, Myoporum acuminatum, Nerium oleander, Wilkstroemia indica, Cryptostegia* sp., *Alstonia constricta, Phytolacca octandra, Cestrum parqui, Codinocarpus australis, Eremophila maculata, Cheilanthes tenuifolia, Melia dubia*. Plants coming under suspicion for the first time included *Lantana montevidensis, Ficus glomerata* and *Neptunia gracilis*. It was suspected that *Phaseolus lathyroides* caused ABORTION. OESOPHAGEAL DISEASE in horses was seen after feeding with *Crotalaria foliastrum*. Feeding trials confirmed that *Xanthorrhoea hastile* will cause WALLUM DISEASE and resolved this group of diseases, in which ataxia is a prominent symptom, into ZAMIA POISONING (*Macrozamia*) and GRASSTREE POISONING (*Xanthorrhoea*). Other poison plants under suspicion were *Pteridium aquilinum, Euphorbia drummondii, Nicotiana velutina, Cyperus* sp. (horses), and rhubarb (fowls).

Cases of poisoning investigated involved arsenic, lead, phosphorus, strychnine, salt, phenothiazine (in goats), B.H.C., toxaphene, D.D.T., sodium fluoride, nitrite and zinc.

Diseases of cattle mentioned include FOOT ROT, in which sulphadimidine gave good results and vaccination appeared to protect for 3 months; STAPHYLOCOCCAL MASTITIS, which failed to respond to treatment; ENZOOTIC HAEMATURIA; XANTHOSIS; and endemic BOTULISM. Among horses WALKABOUT DISEASE was less prevalent owing to poor growth of the plant *Crotalaria retusa*. QUEENSLAND ITCH was common. EQUINE INFLUENZA was spread from race meetings. There are notes on breeding and feeding trials with sheep, cattle, pigs and poultry.—H. McL. GORDON.

NEW ZEALAND. (1956). **Department of Agriculture. Annual report of the Director-General of Agriculture for the year ended 31 March 1956.** [FAWCETT, E. J.] pp. 178. Wellington: R. E. Owen, Govt. Printer. **3148**

Amongst sheep diseases investigated were FACIAL ECZEMA, ABORTION, WHITE MUSCLE DISEASE and CHRONIC LARYNGITIS.

The use of the complement-fixation test for JOHNE'S DISEASE was further investigated. Hole's test was studied and also a new test, the micro-complement fixation test, developed at Wallaceville. Both tests had good degrees of —but not absolute—reliability.

Stock condemned under the Stock Act were:—for TUBERCULOSIS, 8,368; for JOHNE'S DISEASE, 410; for ACTINOMYCOSIS (and ACTINOBACILLOSIS, 252; and for MALIGNANT TUMOURS, 154. All these show a reduction compared with the previous year.

JOHNE'S DISEASE was diagnosed in cattle on 30 farms in North Auckland, an area previously supposed to be free. It is emphasized that while the number of reported cases of this disease shows a reduction, it is only due to the higher price for cow beef, as farmers prefer to send their cattle direct for slaughter rather than receive compensation under the Stock Act. JOHNE'S DISEASE in sheep is confined to a restricted area in South Canterbury, 18 farms being affected.

Amongst non-scheduled diseases, LEPTOSPIROSIS was reported in horses, cattle, sheep and pigs, and in a number of instances those working with the stock were also involved. HYDATID INFECTION also caused considerable

trouble and every endeavour is being made to induce farmers to take simple measures to deal with this menace.—D. S. RABAGLIATI.

COLONY OF NORTH BORNEO. (1956). **Annual Report of the Department of Agriculture for the year 1955.** [GREIG, J. L.] pp. 35. Jesselton: Govt. Printing Department. [Items of veterinary interest pp. 19-23.] **3149**

The policy of the veterinary branch—to conserve and increase all livestock in a balanced agricultural economy—remains unchanged. The country was free from the major epizootics, no case of RINDERPEST, BOVINE CONTAGIOUS PLEUROPNEUMONIA nor F. & M. DISEASE occurred.

The control of SURRA was effective and no case of new infection nor of relapse occurred. All ponies exported or in transit are subject to examination. In all, 7,043 blood tests and 872 prophylactic injections of antrypol were made. TICK INFESTATION still gives trouble among ponies and cattle, but the increasing use of benzene hexachloride has been of value.

The colony remains free from RABIES. The estimated livestock population on the 31st December 1955 was 3,000 ponies, 20,000 cattle, 70,000 buffaloes, 20,000 goats, 67,000 pigs and 2,500,000 poultry.—D. S. RABAGLIATI.

NYASALAND PROTECTORATE. (1956). **Annual Report, 1955. Department of Veterinary Services and Animal Industry, Nyasaland.** [FAULKNER, D. E.] pp. 47. Zomba (Nyasaland): Govt. Printer. **3150**

There are 307,026 cattle, 78,709 sheep, 326,113 goats, 77,145 pigs, 37 horses and 199 donkeys.

Tick-borne diseases are the most common causes of losses. EAST COAST FEVER is endemic in the Northern and Central Provinces; of 298 cases diagnosed in the Central Province, most occurred during the rains when movements of animals are difficult. It is proposed to use prefabricated steel dipping tanks to improve facilities.

In the Southern Province the most important cause of losses is HEARTWATER. Sulphadimidine is used successfully in treatment. Toxaphene is recommended for use in dipping tanks to destroy the vector *Amblyomma variegatum*.

Anaplasma, *Babesia* and *Theileria mutans* occur in all parts of Nyasaland. TRYPANOSOMIASIS occurs in parts of all Provinces. *T. vivax* and *T. congolense* are the common parasites of cattle. *T. brucei* was diagnosed in one dog. Dimidium bromide was used in treating 4,000 cattle and 206 head were treated with ethidium chloride. The results were satisfactory.

TUBERCULOSIS was diagnosed in African owned cattle in the Mzimba district of the Northern Province. Twenty-six carcasses were condemned in the Mzimba abattoir during 1955. Of 21 head sent to Blantyre for slaughter three had generalized TB. and four others had lung lesions.

The Southern Province tuberculin tests were continued on a voluntary basis with the active co-operation of cattle owners: there were no reactors.

RABIES was diagnosed in 34 dogs, 4 cattle, a pig and a cat. These figures are no indication of the actual incidence. 1,295 dogs were immunized in the Southern Province and 709 destroyed. In the Central Province 5,446 dogs were destroyed and 346 immunized. In addition a tie-up order was applied. All the cases were non-vaccinated animals.

CONTAGIOUS ABORTION is endemic in the Southern Province. African herds in which reactors are found are being vaccinated with Strain 19 *Br. abortus* produced locally. A survey in the Dowa district for carriers of *Br. melitensis* yielded negative results.

DEMODECTIC MANGE is still prevalent in African owned cattle in the Southern Province; cases also occur in the Northern and Central Provinces. Grossly infected animals are slaughtered. Two cases were reported in dogs. PSOROPTIC MANGE occurred in a few cattle on the lake shore in the Northern Province. SARCOPTIC MANGE was treated in a number of dogs. There has been no recurrence of CUTANEOUS STREPTOTHRICOSIS (so-called "SENKOBO SKIN DISEASE" of N. Rhodesia).

HELMINTHIASIS of all youngstock, FASCIOLIASIS in cattle of all ages, INFECTIOUS OPHTHALMIA and THREE-DAY SICKNESS of cattle have been prevalent. The latter has caused two deaths of cattle of European breeds.

Serological diagnostic techniques demonstrated the presence of RIFT VALLEY FEVER and also Wesselsbron virus in sheep.

An outbreak of SWINE FEVER [African type?] occurred in the Ncheu district of the Central Province among African owned pigs.

There was an outbreak of NEWCASTLE DISEASE in African owned flocks. FOWL POX, FOWL CHOLERA and FOWL TYPHOID also occurred. COCCIDIOSIS and HELMINTHIASIS are the main causes of losses.

The Laboratory Services have been short of a Senior Veterinary Research Officer since the beginning of the year but despite staff difficulties

the routine diagnostic work has been carried on. Details of the work carried out are given with tables showing results of routine laboratory examinations.

A large section of the report is devoted to the Animal Husbandry, Livestock Improvement and Animal Industry Centres, and also Livestock Production and Industry.

The staff was made up of 28 European and 12 African Officers and 555 other Africans.

—J. A. GRIFFITHS.

FEDERATION OF RHODESIA AND NYASALAND. (1956). **Report of the Secretary to the Federal Ministry of Agriculture for the year ended 30th September, 1955. Presented to the Federal Assembly 1956.** pp. 123. Salisbury: Government Printer. 10/6d. [Includes report of the Director of Veterinary Services (D. A. Lawrence.) pp. 96-123.] **3151**

Theileria infection (other than East Coast fever), HEARTWATER, ANAPLASMOSIS and PIROPLASMOSIS were prevalent. Losses which continue to occur are attributed to insufficient dipping measures. Owing to the danger of ARSENIC POISONING (there were 784 deaths in 1955) arsenical dip fluids are being replaced by benzene hexachloride or toxaphene. Spraying is favoured by the Government but is not popular as it entails supervision.

There were 885 deaths in 29 outbreaks of *Theileria* infection other than East Coast fever. Losses from HEARTWATER are severe in areas where *Amblyomma* ticks occur. Vaccine is being used on a ranch in Matabeleland.

Despite all efforts TRYPANOSOMIASIS still spreads. Whilst in some areas there appears to be an improvement, in others the disease reappears or spreads to new sites. Three Veterinary Officers and 8 Animal Health Inspectors are specially employed on control duties in addition to the field staff employed in contagious disease control throughout the country. Treatment is usually by i/v inj. of dimidium bromide but 17,000 cattle were given s/c doses of antrycide "prosalt". Bush clearing for tsetse control and fencing to prevent movements of game or cattle out of or into tsetse areas are used extensively.

It was found that RIFT VALLEY FEVER was causing abortions. Blood serum tests carried out at Onderstepoort showed RVF virus and in some cases a second virus which had been named Wesselsbron virus. Surveys are being made to estimate the extent of the infections by these viruses. A vaccine against RVF but ineffective against Wesselsbron virus had been developed at Ondersterpoort and is used in Rhodesia.

Cases of RABIES were: 81 dogs, 12 jackals, one cat, 4 cattle and one pig, and one human case; the total incidence was 83 less than in the previous year. Vaccination is not enough (nine vaccinated dogs died of rabies). Quarantine, including restriction of movements and destruction of ownerless stray dogs, must really be enforced. It is not easy to recruit anyone to shoot dogs. 105,380 dogs were immunized.

There were three outbreaks of FOOT AND MOUTH DISEASE all due to type S.A.2 virus. It is suggested the disease may have been kept going by slightly susceptible ungulate game. 105,519 cattle were immunized with field virus. In two outbreaks the symptoms were mild; in the third the reactions were very severe.

Of 18,342 cattle tuberculin tested under a voluntary scheme 16 were reactors. In compulsory tests of 187 head 58 reacted. On one ranch there were 2·1% reactors in 12,505 cattle tested.

There were six outbreaks of ANTHRAX and 44 deaths. 82,470 cattle were vaccinated. At one centre goats vaccinated with anthrax vaccine had 7% abortions.

BLACKLEG—491 deaths were reported, but there were probably many more. Immunization is carried out by the owners. There were 30 confirmed outbreaks of BOVINE CONTAGIOUS ABORTION.

135 animals were in quarantine for CONTAGIOUS EPIDIDYMITIS AND VAGINITIS. During the year 25 new cases were entered and 23 released. There is only a slight improvement in the situation. Difficulty in diagnosis is the main obstacle. The only hope appears to be slaughter of the infected animals and the use of artificial insemination.

There were 113 cases of AFRICAN HORSESICKNESS but only 12 deaths. Most of the horses are immunized with vaccine. SWEATING SICKNESS is associated with a flush of *Hyalomma* ticks. Benzene hexachloride or toxaphene dips or sprays are used for controlling these ticks in dairy herds. COCCIDIOSIS occurred in 3-year-old oxen.

At meat inspection by the Veterinary Department of 259,578 carcasses, 2,305 were condemned, the main reasons being "measles", emaciation and oedema. Cattle census figures were: European owned 1,264,764, and African owned 1,847,430 head. There were 4,851 dipping tanks and 223 spraying units.

Details are given of the activities of the Laboratory staff, including issue of vaccines,

control of artificial insemination, diagnostic services and research. The most important research in progress has been on CONTAGIOUS EPIDIDYMITIS AND VAGINITIS at the Gwebi Station. Past records have shewn a considerable variation in strains. This was so in a freshly infected herd carrying an atypical infection which when run in contact with another herd in which the disease had been in existence for some years had eight deaths within a few months and a large proportion of the remainder became sterile on account of peritoneal adhesions involving the fallopian tubes and ovaries. The P.M. examinations revealed the typical findings of peritonitis and pleurisy found in affected herds, but in a more acute form. In transmission experiments vaginal discharges were used on cows at Gwebi Station but the disease could not be reproduced. The acute form of the disease has now subsided but the disease continues its normal course. Observations on infected herds revealed, in a herd of Friesland cows under good management, that disposal of infected and sterile animals and adoption of artificial insemination from the herd's own healthy bulls resulted in a satisfactory conception rate. Eight months later five infected animals were found. The possibility of the disease being caused by a virus is now to be investigated.

An investigation is being made of the various strains of *Brucella* in Rhodesia. *Br. melitensis* agglutinins are present in the blood serum of many human reactors to brucella antigen in Rhodesia. Strains isolated from animals are being typed at the Veterinary Laboratory, Weybridge.—J. A. GRIFFITHS.

TANGANYIKA. (1956). **Annual Report of the Veterinary Department, 1955. Vol. 1.** [DAWE, E. C. S.] pp. 36. Dar es Salaam: Government Printer. 4s. **3152**

ANTHRAX was widespread and reported mortality was 408 head of which 245 were sheep. In areas with a high incidence mass inoculation was used. Comparatively few cases of BLACKLEG were encountered. BRUCELLOSIS was widespread among exotic and grade cattle and greater use was made of Strain 19 vaccine. An increase in the incidence of TUBERCULOSIS in slaughter cattle is reported. Outbreaks of HAEMORRHAGIC SEPTICAEMIA in the Northern Province were controlled by vaccination; the disease was also suspected in the Western Province. CALF SCOUR and CALF PARATYPHOID were treated with vaccines and sulphonamides. CERVICO-VAGINITIS and EPIDIDYMITIS occurred in a large number of pedigree herds. Avianized vaccine was used on 3,500 cattle in quarantine for BOVINE CONTAGIOUS PLEUROPNEUMONIA. STREPTOTHRICOSIS and RINGWORM were frequently encountered. A severe outbreak of FOWL TYPHOID occurred in which previous vaccination of the young birds (2 months before the outbreak) did not affect the course of the disease.

TRYPANOSOMIASIS remains a major problem. Bush clearance (a slow and costly process) and chemotherapy with dimidium bromide or ethidium bromide and antrycide "pro-salt" are the main measures adopted. Tsetse encroachment and an increase in fly density are reported from various areas and, in the Southern Highlands Province, reported incidence was 500 per month as opposed to 30 per month 2 years previously. Little change is reported in the incidence of EAST COAST FEVER in recognized endemic areas. A severe outbreak with high mortality is reported. Mortality among susceptible trade cattle passing through endemic areas was heavy. Better control on the holding grounds prevented heavier losses. Widespread sporadic cases of ANAPLASMOSIS are reported; control measures included vaccination, treatment with mepacrine, and tick control. PIROPLASMOSIS occurred sporadically in cattle and dogs. Tick control is by dipping or spraying. 53 dips were in operation and the weekly rate of immersion was 181,349 head.

There were no outbreaks of RINDERPEST in adult cattle or game, but it was diagnosed on 5 occasions in calves. There were no reports after July; this is the longest period of freedom from the disease since 1890. Routine vaccination was carried out with K.A.G. on 2,965,363 cattle and lapinized virus on 14,520 susceptible exotic cattle. Trade stock was vaccinated along the routes and at the destinations. A severe outbreak of RABIES occurred near the Ruanda-Urandi border where 50 persons (of whom 3 died) are believed to have been injured by rabid dogs. Over 4,000 stray dogs were destroyed and arrangements for compulsory inoculation were made. Widespread FOOT AND MOUTH DISEASE was attributed to movement of trade stock. Of 12 outbreaks (some of them severe) 11 were caused by type "O" and 1 by type "A" virus. Control measures included quarantine and vaccination in some cases and aphthization and mouth swabbing in others. AFRICAN SWINE FEVER was suspected on clinical and P.M. findings in the Lake Province. BOVINE MALIGNANT CATARRH was more widespread than normal in the Northern Province and THREE-DAY FEVER occurred in the Northern and

Eastern Provinces. RIFT VALLEY FEVER was suspected in calves. CONTAGIOUS PUSTULAR DERMATITIS affected sheep on a stock farm and cases of BLUETONGUE were recorded. LUMPY SKIN DISEASE was suspected. FOWL POX was prevalent and cases of LYMPHOMATOSIS were encountered. EPIDEMIC TREMOR and STUNTED CHICK DISEASE were suspected. RICKETTSIA INFECTIONS occurred in the Northern Province and the percentage of *Amblyomma* ticks found in another area is considered an indication of high incidence of the disease.

Serious economic losses from HELMINTH INFESTATION are reported.

A summary of laboratory services during the year is given.—T.E.G.R.

INDIA. (1956). **Proceedings of the tenth meeting of the Animal Husbandry Wing of the Board of Agriculture and Animal Husbandry in India. 9th to 17th March, 1953.** pp. 272. Poona: Indian Council of Agricultural Research. Price: Rs. 6/12. or 10s. 6d. **3153**

The three committees of the Animal Husbandry Wing—the Livestock Committee (Animal Breeding), Animal Health, and Dairying—reported their discussions and recommendations to the Plenary Session. The meeting was preceded by a conference. Each committee had before it notes by experts on the subject in question. These are published at the end of the report. The subjects for discussion included artificial insemination, the use of foreign breeds for grading up local cattle; indigenous grasses and legumes and their cultivation; a rinderpest eradication plan and the choice of a vaccine to be used on a mass scale; slaughterhouses and meat inspection practice; and the possibility of increasing milk production.

—D. S. RABAGLIATI.

REPUBLIC OF IRELAND. (1957). **Twenty-fifth Annual Report of the Ministry of Agriculture, 1955-1956.** pp. 81. Dublin: The Stationery Office. 7s. 6d. **3154**

203 students—including 39 freshmen—attended the opening term of 1955–56 of the Veterinary College of Ireland. During the year 33 were granted the Diploma M.R.C.V.S.

In the General Pathology section the number of P.M. examinations made and specimens examined was 2,103. Of these 458 were from horses, 511 from cattle, 117 from sheep, 141 from pigs, 730 from dogs, 95 from cats and 51 from miscellaneous sources.

The General Pathology Section found adult tapeworms, *Echinococcus granulosus* in a greyhound born and bred in Dublin. This is the first occasion in which they have been found in a native dog.

The experiments on OEDEMA DISEASE of pigs which were initiated during the previous year at the Department's Veterinary Research Laboratory were continued. It was shown that the serum of pigs which have received a series of inoculations of formolized alum precipitated centrifuged supernatant intestinal fluid from natural cases of the disease has the power of neutralizing the oedema disease producing factor, a factor which has been shown to be present in bowel contents of affected animals. This finding supports the theory that the disease is due to a specific toxin—most probably bacterial from the intestine.

The work of the laboratories is summarized under the following heads; General Diagnosis; Biochemistry; Parasitology; Bee Diseases; Vaccine; Bovine Infertility; Mastitis; Swine Diseases and Calf Diseases.

Of 1,686 specimens sent in by Local Authority Veterinary Inspectors for confirmatory diagnosis 740 were positive for TUBERCULOSIS. 898 cattle were slaughtered under the Tuberculosis Order of 1926.—D. S. RABAGLIATI.

NETHERLANDS. (1955/56). Mededelingen betreffende de Gezondheidsdienst voor Vee in Friesland. 37e Jaarverslag, 1 Mei 1955—30 April 1956. [**37th Annual Report of the Health Service for Cattle in Friesland, 1955-56.**] pp. 88. Leeuwarden. **3155**

Between May 1955 and May 1956 tuberculin tests on 412,825 cattle in 20,994 herds in Friesland revealed 48 reactors in 29 herds; the reactors were slaughtered. The whole of the Netherlands was declared free from bovine TB. in May 1956, and herds are now tested once every second year. Non-specific reactions to tuberculin occurred in 4·7% of the cattle tested in 1955–56. The incidence of positive bulked milk samples tested by the *Br. abortus* milk ring test was much reduced, and 44 out of 46 collecting centres reported that more than 75% of samples were negative. The amount of brucellosis vaccine used was 693 litres compared with 785 the previous year. Using the complement-fixation test for Johne's disease, 65 of 89 positive reactors were found infected at slaughter, and so were 14 of 56 doubtful reactors and 6 of 29 negative reactors. Of 172 positive reactors to the johnin test, 79 were found to be infected, and so were 20 of 38 negative reactors. In examining bulls, 22 of 137 were found unsuitable for artificial insemination, and 44 of 263 unsuitable for export. 124,769 cows were arti-

ficially inseminated and the conception rate was 63·5%, with an average of 1·62 inseminations for each inseminated cow. 1,418 aborted foetuses were examined and *Br. abortus* was found in 15·6%, *V. fetus* in 1·9% and *Tr. foetus* in none. Control of warble flies continued to be satisfactory. Nearly all cattle were inoculated with F. & M. disease vaccine.—R.M.

U.S.A. (1955). **New York State Department of Health. Annual report of the Division of Laboratories and Research.** [DALLDORF, G.] pp. 154. Albany: New York State Department of Health. **3156**

An account is given of the discovery, development and application of Nystatin (E. L. Hazen & R. Brown). The antibiotic was obtained from the aerial sporogenous mycelium of *Streptomyces noursei*. Aqueous suspensions have been stored for at least four months at −25°C. without loss of activity. The product is marketed as "Nycostatin". *S. noursei* yields two antifungal agents nystatin and actidione. The latter appears to be identical with "Actidione" (cycloheximide) from *Streptomyces griseus*. Nystatin is both fungicidal and fungistatic and has a wide range of activity against pathogenic fungi but no activity against bacteria, nor against the poliomyelitis, Coxsackie and foot and mouth disease viruses in concentrations which are fungistatic.

In therapeutic experiments mice treated at the time of infection were protected against *Cryptococcus neoformans* (90% for 7 weeks); *Histoplasma capsulatum* (80% for 3½ months); *Blastomyces dermatitidis* (60% for 8 weeks). Oral infections by *Candida albicans* in rabbits were cured by oral administration of nystatin. It also protected infected mice against *Coccidioides immitis* or *Sporotrichum schenckii*.

Tinctures or ointments containing nystatin gave encouraging results in cases of tinea pedis and tinea corporis due to *T. rubrum*. Other clinicians report successful treatment *per os* of moniliasis, oral, vaginal, intestinal, cutaneous and generalized.

In a serological survey of the incidence of PSITTACOSIS among people working on poultry farms and in pet shops in New York State, using the complement-fixation test, 97 of the 111 specimens examined had titres of 1:20 or lower. Of the remainder 12 had titres of 1:21 to 1:80; eight of these were from people working in pet shops and four from employees of poultry farms. Of 200 sera from the general population (persons presumed normal) 7% had titres of 1:21 to 1:300.—J. A. GRIFFITHS.

BOOK REVIEWS

IRVINE, K. N. [Adviser in BCG Vaccination to the Oxford Regional Hospital Board.] (1957). **BCG and vole vaccination. A practical handbook.** pp. 103. London: National Association for the Prevention of Tuberculosis. 2nd Edit. 15s. **3157**

This second edition is basically the same as the 1954 edition [see *V.B.* **25,** 2233], but it has been brought up to date by numerous minor alterations.—R.M.

BURNET, F. M. (1956). **Enzyme antigen and virus. A study of macromolecular pattern in action.** pp. viii + 193. Cambridge: University Press. 18s. **3158**

This book is, in effect, a third and enlarged edition of "The Production of Antibodies", (Melbourne, 1941 and 1949) with its title and place of publication changed. Like the former editions it is of great interest and value to students of the biological sciences though in one respect it is not an improvement on its predecessors, their cogent comment and limpid style being replaced by rather abtruse argument and abstract expression. One of the reader's difficulties is in the assimilation of new words (or new uses of words) for concepts which are commonly abstract. For example on p. 34 we have in one sentence "organiser, inducer, catalyst, template and enzyme", and at various times the author's meaning must be absorbed for "RNA+, R.U., S.C.P., A.U., genocopy and C.P.". The reader must be careful to distinguish known phenomena indicated by these symbols from entirely suppositious descriptions; and he must note that the author gives meanings to some words (*e.g.* "formulation", template", "heterozygous") which are not those of common usage.

The central part of the book, on antibody production, is of particular interest for two concepts restated from the former editions. The first of these is that antibody molecules are not moulded by the antigen itself but by some mould, cast by the antigen, but reproducible in the antibody-producing cells and their descendants. As the author admits on pp. 66 and 67, this view does not conflict essentially with that of Haurowitz, which explains what it set out to explain and has not addressed itself to that

aspect of antibody replication with which Burnet is concerned; the two views, both of them theoretical, are fusible. The author supports his contention with several arguments some of which are expressed in a slightly confused manner. For example it is essential to Burnet's view that antigens do not persist within the body; indeed he describes such persistence as "inconceivable" on p. 46 (though Haurowitz evidently conceives of it) but on p. 64 he speaks of antigenic persistence for "a period of weeks, months or even years". In fact, the point is not proven either way except for the known persistence of certain specific antigens such as the pneumococcal polysaccharides.

The second argument of the central section is the self-marker concept originally invoked to explain "horror autotoxicus", the absence, for example, of anti-A from persons of Blood group A (though it doesn't quite explain the presence of anti-B in such persons, which is a significant problem). It is not quite true to claim (p. 41) that the self-marker concept based on Owen's observations on dizygotic cattle twins, is confirmed by Medawar's work with skin-grafting. The latter is consistent with the self-marker concept as it is with some other explanations of immunological tolerance, of which phenomenon Medawar's work has immeasurably increased our comprehension. The distinction between fact and fancy among the building blocks of the author's argument, and hence an appreciation of the stability of the structure, will provide a most valuable intellectual exercise for the reader. For example on p. 57 "there are hints that only a relatively small number of configurations are concerned in 'self-recognition". The hints are not specified but on the following page, the "small number" is not only all but accepted but specified as between 4 and 10. By p. 72 phrases such as "biologically inevitable" and "physiological necessity" have been recruited.

As an appendix to the section on antibody production, Green's view on carcinogenesis are described and appraised, together with some remarks on sensitizing antibodies. It is not quite clear why the author supposes that antibodies against components of tissue cells are necessarily of the sensitizing type. As the title of the book implies the central section is supported by a preceding chapter on enzyme action and a succeeding one on virus multiplication. The former is devoted to a consideration of adaptive enzymes and the function of ribonucleic acid in protein synthesis. The latter also takes up the relationship of ribonucleic acid and protein to virus multiplication, the whole book seeking to show that the replication of pattern protein in all these fields must have a substantially common mechanism. The final chapter is an admirable and most stimulating essay on the scope of biological generalization.

The merits of this interesting work lie less in the validity of the arguments than in the range of matter considered. The book is well produced with a valuable bibliography. There are a few misprints such as "Rk" for "Rh" on p. 44 and (presumably) "protype" for "prototype" on p. 59.

A most useful book for biological research students.—G. Fulton Roberts.

Hoogstraal, H. [Head, Department of Medical Zoology.] (1956). **African Ixodoidea. I. Ticks of the Sudan. (With special reference to Equatoria Province and with preliminary reviews of the genera *Boophilus*, *Margaropus*, and *Hyalomma*.)** pp. 1101. Cairo: U.S. Naval Medical Research Unit No. 3. [Research Report NM 005 050.29.07] **3159**

Most of the important species of African ticks are found in the Republic of the Sudan. This volume, which is primarily concerned with ticks in the Sudan, is intended to be followed by others which will consider all economically important tick-species of Africa and the diseases associated with them. The information provided includes a critical review of published information concerning each species and there are references to (a) distribution in the Sudan and elsewhere (b) hosts (c) biology and (d) identification. In this last section there is a key to the families and genera of adults, with a note, however, that the characters listed in the key do not necessarily apply to species within the same genera but from areas outside the Sudan.

Diseases with which each species has been incriminated are usually merely listed by common name and aetiological agent, this section being intended only as a cross reference to subject chapters in an intended subsequent volume.

This is a very worthwhile volume, the value of which is enhanced by a bibliography of over 1,800 references. The author, who is Head of the Department of Medical Zoology of the U.S. Naval Medical Research Unit in Egypt, is to be congratulated on its publication.

—S. Brian Kendall.

Hiscocks, E. S. (1956). **Laboratory administration.** pp. xvi + 392. London: Macmillan & Co. Ltd. 36s. **3160**

Scientific research has now reached a stage when the sums expended in its pursuit are very

large, when the price of failure to keep abreast with competitors in peace or war is very high, and when first class brains, ever a scarce commodity, are a prime requirement. This book is an account of the views and experiences of the secretary of one of the largest and most diverse laboratories in the world. No scientific worker can work in isolation. The purpose of this book is to examine his working milieu in great detail. The principal theme is that management can provide the material conditions for discovery and development and that only if these conditions are right will worthwhile results follow. Most scientists would benefit greatly from a study of the book. The author has rather more to say about the deficiencies of administrators as scientists. It is admittedly difficult to get scientists to take wider views. Within the book is a vast range of information not elsewhere available. For anybody willing to look beyond the far side of his bench the book is of absorbing interest.—G. SLAVIN.

STAMM, G. W. (1957). **Veterinary guide for farmers.** pp. 384. Chicago: Windsor Press. 3rd Edit. $3.95. **3161**

Like many books of its kind, this is an over-simplification of the subject. While the accounts of the principal diseases may be useful to farmers, the author falls down on practical matters; skilled techniques such as the rectal diagnosis of pregnancy and epidural anaesthesia are made to appear misleadingly simple to perform. Most of the photographs are meaningless and could have been omitted without harm to the text.—R.M.

BOOKS RECEIVED

[Notice of recently received books in this list does not preclude review.]

GARNER, R. J. (1957). **Veterinary toxicology. Formerly Lander's veterinary toxicology.** pp. 415. London: Baillière, Tindall & Cox. 35s.

HEWITT, R. M. (1957). **The physician-writer's book. Tricks of the trade of medical writing.** pp. xxiii+415. London (& Philadelphia): W. B. Saunders Company. 63s.

JONES, I. C. (1957). **The adrenal cortex.** pp. x+316. Cambridge: University Press. 37s. 6d.

LANMAN, J. T. (Edited by) (1957). **Physiology of prematurity. Transactions of the first conference, March 21, 22, 23, 1956, Princeton, N.J.** [Sponsored by the Josiah Macy, Jr. Foundation.] pp. 151. New York: Josiah Macy, Jr. Foundation. $3.25.

MAYER, K., LACROIX, J. V. & HOSKINS, H. P. (1957). **Canine surgery. A text and reference work.** pp. xix+820. Evanston, Illinois: American Veterinary Publications, Inc. 4th Edit. revised and enlarged.

MÜSSEMEIER, F. (1957). Grundsätzliches zur Tierseuchenbekämpfung-Allgemeine Veterinärpolizei. [**Principles of animal disease control.**] pp. 267. Berlin (& Hambourg): Paul Parey. DM 21.

ROTHSCHILD, M. & CLAY, T. (1957). **Fleas, flukes and cuckoos. A study of bird parasites.** pp. xiv+305. London: Collins. 25s.

TAVERNIER, H. (1957). Pratique vétérinaire. [**Veterinary practice.**] pp. xv+278. Paris: Vigot Frères.

THIMANN, K. V. (1957). **The life of bacteria. Their growth, metabolism, and relationships.** pp. xviii+775. New York (& London): The Macmillan Company. 65s.

ANON. (1957). **British national formulary, 1957.** pp. 226. London: The British Medical Association, The Pharmaceutical Society of Great Britain. 6s. 6d.

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